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THE PLANTS OF WINNESHIEK COUNTY.

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Winneshiek county presents a flora of unusual richness. Both because of its geographic position and its varied surface features it offers conditions which have made possible the development of a variety of plants scarcely equalled in any other county of the state. Its northerly position and its rough topography, especially along the Upper Iowa or Oneota river have brought a northerly flora, such as belongs to the heavily wooded regions of Minnesota and Wisconsin; its wooded knobs and ridges along the Turkey and the head waters of the Yellow rivers remind one of the rough wooded areas of southern Iowa; while the prairies are but a continuation of the greater prairies of the west. Each of these territories presents a variety of conditions. The roughest includes the driftless area and the drift border, with their deep gorges with narrow alluvial bottoms, their exposures of both sandstones and limestones, their shaded mossy banks and wooded slopes with not infrequent small bogs, and their drier wooded ridges with occasional treeless barren summits; the more southerly timbered ridges present somewhat similar conditions, but without the prominent rock-exposures, and with floral areas less sharply defined than those which characterize a region cut by deep gorges; and the treeless areas include both the rich level prairie and the prairie bogs of the Iowan drift, and the more rolling and drier prairie of the Kansan. The soils are derived chiefly from loess and drift (which are discussed elsewhere in this report), and therefore vary comparatively little in chemical composition. Occasionally coarser, sandy material appears on the ridges, but on the whole a finer soil prevails,

its fertility, however, varying with topography and plant-covering, and with the consequent possibility of retaining the humus-laden surface soil. Alluvial tracts are not, for the most part, of great extent in the county, being limited by the narrow valleys. In the rougher parts sandy and rocky tracts are frequent.

The investigations upon which this report is chiefly based were carried on largely during the spring, summer and fall of 1903. Every township in the county was visited, and certain typical localities were more thoroughly studied. Thus Moneek and Ft. Atkinson were selected for the study of the flora of the rougher territory of the two principal river systems in the southern part of the county; the vicinity of Calmar for the southerly prairie, and Orleans township and Bluffton for that in the western part of the county; for the rougher wooded region the entire gorge of the Oneota was traversed a number of times across the county, Decorah, Bluffton and Kendallville being the main centers of investigation, while the hilly country bordering Canoe creek and Bear creek received some attention; and the vicinity of Hesper, with its woods and prairies, and unique exposures of St. Peter sandstone proved the richest and most interesting single locality in the county.

The flora of this county had received some previous attention. Arthur's "Flora of Iowa"* contains numerous references to plants from this county, which are based, at least in large part, on material furnished by Mrs. M. C. Carter of Hesper, and Mr. E. W. D. Holway, formerly of Decorah; individual references are also made to Winneshiek county plants by a number of other authors who did not secure the material themselves, but received it from others—chiefly from Mrs. Carter, and Messrs. E. W. D. Holway, Herbert E. Goddard, Thos. E. Savage, Alois Kovarik, and E. Orr.†

*Contributions to the Flora of Iowa, J. C. Arthur, 1876, with continuation, Nos. II and VI in the Proceedings of the Davenport Academy of Natural Sciences, Vols. III and IV (Such are the following:

Cerastium arvense var. *oblongifolium* n. var., Hollick and Britton, Bull. Torr. Bot. Club, Vol. XIV, 1887.
Notes on the Aquatic Phenogams of Iowa, —R. I. Cratty, Bull. Lab. Nat. Hist., State Univ. of Iowa, Vol. III, 1896.
An illustrated Flora, etc., Britton and Brown, 3 Vols., 1896-1898.
The Cyperaceae of Iowa, R. I. Cratty, Bull. Lab. Nat. Hist., State Univ. of Iowa, Vol. IV, 1898.
The Iowa Pteridophyta, B. Shimek, *ibid.*, Vol. V, 1901.
The Vascular Cryptogams of Iowa, etc., L. H. Pammel, Proc. Ia. Acad. Sci., Vol. IX, 1902, also reprint, as Cont. No. 20, Bot. Dep't., Ia. S. Col. of A. and M. A.
Manual of Botany of the No. U. S., —A. S. Gray, several editions.
Manual of the Flora of the U. S., —N. L. Britton, 1st ed., 1901, 2nd ed., 1906.

Aside from the resident students of botany the most extensive collectors have been the following:

Mr. T. J. Fitzpatrick, who made a trip down the Upper Iowa in company with Dr. Paul Bartsch in the summer of 1895. He has published, in part jointly with Mrs. Fitzpatrick, a number of reports on the plants collected,* including, however, a large number of plants obtained from other collectors.

Prof. Thos. E. Savage, who visited the county in the spring of 1899. A small part of his collection was noted in some of the references cited, but the greater part is here reported for the first time.

The present writer, who made a number of trips to the county in 1902 and 1903. His collections and those of Prof. Savage are now in the Herbarium of the State University. They include a large number of lower cryptogams, especially fungi, lichens and mosses, a report upon which cannot be here included. Two short reports treating of the plants of the county have been published by the writer,* and in the present paper it is purposed to report upon all the plants obtained in the field, and also to include such as have been definitely reported from the county by others.

All the papers treating of Winneshiek county plants which have been heretofore published, have been little more than mere annotated lists. Very little attention has been paid to the economic value of the native plants, though this is often noteworthy, and the public has treated them rather as an undesirable encumbrance which must be removed as soon as possible to make way for the plants of the field and pasture. Aside from the use which we may make of individual plants or their products, the native flora has a vastly more important function whose influence extends far beyond the limits of any particular tract of land upon which it is developed, especially in a territory with a much broken surface such as is found in this county. It develops a better soil, conserves moisture, and prevents erosion and the

*Notes on the Flora of Northeastern Iowa.—Proc. Ia. Acad. Sci., Vol. V, 1898.

Manual of the Flowering Plants of Iowa, 1899.

The Orchidaceæ of Iowa.—Proc. Ia. Acad. Sci., Vol. VII, 1900.

The Scrophulariaceæ of Iowa.—Proc. Ia. Acad. Sci., Vol. X, 1903.

*The Flora of the St. Peter Sandstone in Winneshiek County, Iowa, Bull. Lab. Nat. Hist. S. U. I., Vol. V, 1904.

Notes on Some Iowa Plants.—Proc. Dav. Acad. Sci., Vol. X, 1904.

consequent clogging of our streams with sand and mud. It is superior to any aggregation of cultivated or pasture plants for the reason that it is not removed to leave the soil bare during a large part of the year, as is the case with cultivated crops, and it is not eaten or tramped upon by cattle as in the case of pastures. Moreover, through long adjustment to existing conditions the native plants are perfectly adapted to the various surfaces upon which they occur, and they have become more pliant under the varying moods of our uncertain climate. They are, therefore, more certain of persisting, and thus continuing their beneficent influence. In a rough country the dangers from erosion and desiccation are great, not only to the land itself, but to the streams and water-courses. The steeper slopes should never be cleared of their covering of native vegetation, either by cultivation or by pasturing, for not only will they not be profitable, but they will be a menace to better lands and to valuable springs and streams.

But aside from these uses to which all our native plants lend themselves more or less readily, many of them more directly, and therefore more appreciably, affect the interests of man. Among the questions to which this usefulness of plants gives rise may be mentioned the problems of the forests, weeds, ornamental plants, medicinal plants, and consideration of rusts, smuts and other fungi which attack plants. The last subject has received much attention locally from Mr. Holway and will not be discussed here.

I. The Forest Problem.

Originally not less than one-fourth of the surface of Winne-shiek county was covered with forest. This was sometimes scant, as upon the rocky slopes and drier hill-tops, or consisted of trees of but little value, as upon the narrow lower bottom lands. Here, as elsewhere, the forest was developed chiefly upon poorer soils. The sandy alluvial bottom lands, the rocky slopes, the gravelly or clayey hills—these formed the favorite habitat of trees. Even where a veneer of rich soil and leaf-mould appeared it was the effect rather than the cause of the forest. The forest prevented erosion; it retained moisture which made easier the disintegration of both organic and inorganic mater-

ials; it annually contributed its leaves to the accumulating soil; it harbored worms and other burrowing animals which brought fine soil-materials to the surface; and in its shelter the burden of dust-laden winds was deposited. So man thought that he saw alluring promise in the richness of the forest soil, and this coupled with the prospect of immediate gain from its products, led him to remove the forest. But an awakening has already come, and men realize that with the removal of the riches of the forest they also lose the richness of the soil, for the rains and melting snows quickly strip it from the hillsides. The land is then practically worthless, for it will make neither field nor pasture—it is fit only for growing trees, as it has grown trees in the past. Few counties in the state have suffered more than Winneshiek in this respect. The principal forest areas were in the roughest territory, unsuited to the ordinary purposes of agriculture. Man's greed and thoughtlessness combined in many cases to strip the best, if not all, of the forest from these hillsides, but this was not the gravest error, for if left to its own resources the forest would renew itself. But an attempt was made in many cases to cultivate or pasture the stripped areas, and this was done on the steepest slopes with uniformly disastrous results. More acres were cultivated than still other acres might be secured, under the pretext that the children of the land-holder must not be left without inheritance. The desire for immediate gain was, however, responsible for this, for men had not yet learned that a growing forest is one of the most splendid legacies which they may leave to their children. The best of the legacy which we ourselves received has been dissipated, in Winneshiek county as elsewhere, but conditions for the renewal of the forest are here very favorable. There are three distinct forest areas in the county, drained respectively by the Upper Iowa, the Turkey and the Yellow rivers. Of these the first is much the largest within the county, but all agree in having a relatively large amount of adjacent rough land, as has been noted. Much of this land is worthless, or at least of little value, for agricultural purposes, and it would entail but little present loss, and would vastly benefit posterity, if given over to the cultivation of timber. This would not require a large amount

of expensive nursery stock, nor great labor in the cultivation of the soil, nor assiduous attention to the welfare of the trees. The territory is so well adapted to the growth of trees that it is necessary only to strew seed on the ground in suitable places, and *to keep out stock and fires*, and the forest will take care of itself. For this purpose seed should be gathered in considerable quantity, preferably from nearby trees, and should not be permitted to become too dry. Seed maturing in spring or early summer may be scattered at once if the land is not devoid of other vegetation, or it may be covered with a thin layer of sand or soil in a shady place and left until fall. Seeds and fruits which mature in autumn should be scattered just before the leaves begin to fall. They will thus be better protected both against the severity of winter, and against squirrels and chipmunks. Less than one-half the seed sown in this manner will germinate, and for that reason it should be scattered liberally. With a little care it may be secured in abundance from native or acclimated trees, practically without expense, in connection with a pleasant summer or autumn outing. If a little trouble is taken each year to re-seed where the stand is thin, to remove rotting wood in order that it may not spread its infection by scattering countless spores of fungi, to trim out excessive underbrush, and to protect the trees against domestic animals and fires, the forest will be a vast improvement upon those which the first settlers found.

Native trees will be found most satisfactory for reforestation, for as yet no introduced forest tree has demonstrated its superiority over the native species. Moreover, in a county as well timbered as this both quantity and variety may be secured with comparative ease. In order that some conception of the range of choice may be given, a list of the native trees and shrubs is here presented, the species being grouped according to habitat. In selecting trees for any tract it is well that heed be given to the character of its surface in order that an appropriate choice may be made from species occupying similar stations elsewhere.

The following list contains the native trees and shrubs of the county. Their distribution, abundance, full scientific names,

etc., may be determined from the systematic list which makes up the closing part of this paper.

TREES AND SHRUBS.

1. *Species belonging to bogs and wet places.*—The species are shrubs, the last two, only, becoming small trees. They are: the meadow-sweet (*Spiraea*), red-osier dogwood (*Cornus stolonifera*), button-bush (*Cephalanthus*), shiny willow (*Salix lucida*) and pussy willow (*S. discolor*).

2. *Species of the low alluvial bottoms.*—The shrubs are: the false indigo (*Amorpha fruticosa*), sandbar willow (*Salix interior*) and heart-leaved willow (*S. cordata*), the willows sometimes becoming small trees. The soft maple (*Acer saccharinum*), red birch (*Betula nigra*), almond-leaved willow (*Salix amygdaloides*) and black willow (*S. nigra*) are trees.

3. *Species of higher rich alluvial bottoms.*—The wild grape (*Vitis vulpina*) and poison ivy (*Rhus radicans*) are woody vines, the latter sometimes a low shrub; the elder (*Sambucus canadensis*), flowering currant (*Ribes floridum*) and the wahoo (*Euonymus*) are shrubs, the last sometimes a small tree; all the species of haws (*Crataegus*) and the sheep-berry (*Viburnum lentago*) are small trees, the latter sometimes a shrub; and the following species are trees: the box-elder (*Acer negundo*), hackberry (*Celtis*), the ashes (*Fraxinus*, except *F. pennsylvanica*), honey locust (*Gleditsia*), the butternut and walnut (*Juglans*), cottonwood (*Populus deltoides*) and white elm (*Ulmus americana*).

4. *Species of upland thickets.*—The Missouri gooseberry (*Ribes missouriensis*) and the hazel (*Corylus americanus*) are shrubs, and the haws (*Crataegus*) and wild crab (*Malus*) are small trees.

5. *Species of wooded rocky banks and open slopes.*—The following are woody vines: the purple virgin's-bower (*Atragene*), climbing bittersweet (*Celastrus*) and the two honeysuckles (*Lonicera*). The shrubs are: the American yew (*Taxus*), shadbush (*Amelanchier botryapium*), the dogwoods (*Cornus alternifolia*, *amomum*, *asperifolia* and *circinata*), shrubby cinquefoil (*Dasiphora*), dwarf cherry (*Prunus pumila*), leather-wood (*Dirca*), prairie nine-bark (*Opulaster*), wild gooseberry (*Ribes*

cynosbati), the wild roses (*Rosa blanda* and *humilis*), wild black raspberry (*Rubus occidentalis*), dewberry (*Rubus procumbens*), wild red raspberry (*R. strigosus*) red-berried elder (*Sambucus pubens*), bladder-nut (*Staphylea*), high bush-cranberry (*Viburnum opulus*) and arrow wood (*Viburnum dentatum*). The following species are often shrubs, but also become small trees: hoary alder (*Alnus*), alder-leaved June-berry (*Amelanchier alnifolia*), round leaved June-berry (*A. rotundifolia*), panicle dogwood (*Cornus candidissima*), choke cherry (*Prunus virginiana*), staghorn sumach (*Rhus hirta*), prickly ash (*Xanthoxylum*) and black haw (*Viburnum lentago*). The June-berry (*Amelanchier canadensis*) and blue beech (*Carpinus*) are small trees. The following species are forest trees: the balsam (*Abies*), red cedar (*Juniperus virginiana*), white pine (*Pinus*), hard maple (*Acer saccharum*), cherry birch (*Betula lenta*), canoe birch (*Betula papyrifera*), red ash (*Fraxinus pennsylvanica*), balm of Gilead (*Populus candicans*), American aspen (*Populus tremuloides*) and rock elm (*Ulmus racemosa*).

6. *Species of upland, mostly rather open woods.*—The iron wood (*Ostrya*) is a small tree, and the following are forest trees: the hickories (*Hicoria*), large-toothed aspen (*Populus grandidentata*), all the oaks (*Quercus*), the white oak (*Q. alba*) preferring deep woods, and red elm (*Ulmus fulva*).

7. *Species of deep upland woods.*—The hispid greenbrier (*Smilax hispida*) and the Virginia creeper (*Parthenocissus*) are woody vines; the following are trees: red oak (*Quercus rubra*), white oak (*Q. alba*), black cherry (*Prunus serotina*) and basswood (*Tilia*). All the species of the preceding group may also be found in deeper woods.

8. *Species of prairie and forest borders.*—Most of the species of this group are shrubs, as follows: juniper (*Juniperus communis*), lead plant (*Amorpha canescens*), New Jersey tea (*Ceanothus americana*), red root (*Ceanothus ovatus pubescens*), bush honeysuckle (*Diervilla*), prairie rose (*Rosa arkansana*), wild rose (*R. humilis*), prairie willow (*Salix humilis*), and wolf-berry (*Symphoricarpos occidentalis*). The blackberry (*Rubus nigrobaccus*) is also found along borders, but extends to deep woods, and the smooth sumach (*Rhus glabra*) is found along borders, in open woods, on dry slopes, etc. But one small

tree, the wild red cherry (*Prunus pennsylvanica*), properly belongs to this group.

In addition to the foregoing species, which are native, the red currant (*Ribes rubrum*) and the black locust (*Robinia pseud-acacia*) may be found in waste places or openings, having escaped from cultivation. The red currant appears to be native.

Not all the species here listed are of like value, nor are all usable for the same purposes. The most useful *lumber trees* are the ashes, butternut and walnut, red and rock elms, cherry birch, black cherry, the hickories, the oaks, red cedar and white pine. For *ties* and *posts* the white oak, bur oak, honey locust and black locust are most servicable. The most valuable native *shade trees* are the hard maple, hackberry, ashes, American elm, basswood, canoe birch and white pine. The most useful species for *windbreaks* and *shelter belts* are the soft maple, ashes, boxelder, cottonwood, balm of Gilead and red cedar. All of these are used more or less for fuel.

Among the native *ornamental trees* and *shrubs* the hard maple, Virginia creeper and the sumachs are remarkable for the splendor of their autumn foliage; the bittersweet for its bright fruit; the June-berry, crab-apple, hawthorns and black locust for their flowers; the false indigo, honeysuckles, wild roses, elderberries, atragene, bladdernut, dogwoods, black haw, sheep-berry, New Jersey tea and nine-bark for flowers and foliage; and the white pine, balsam fir, shining willow and red-osier dogwood for the beauty of the foliage and crown.

As already noted these native species are eminently suitable for all purposes for which trees and shrubs are used, but nevertheless, numerous species have been introduced in cultivation for ornamental purposes. Among the introduced conifers are the Scotch and Austrian pines, Norway spruce, European larch, arbor-vitæ and hemlock, and among the deciduous trees the silver poplar, Lombardy poplar, buckeye, catalpa, mountain ash and white willow. In this connection a report on a tree-census of a portion of the city of Decorah, including several blocks and streets in the residence part, may be of interest. The number

to the right in each case indicates the number of trees found within the territory selected:

Hard maple	97	Red cedar	11
Soft maple	86	Balsam fir	7
Box elder	64	Walnut	5
American elm	62	Red elm	4
Cottonwood	51	Catalpa	3
White pine	45	Black locust	3
Norway spruce	36	European larch	2
Bur oak (native)	20	Scotch Pine	2
Mountain ash	15	Buckeye	2
White cedar	14	Choke cherry	1
		Hackberry	1

Also several specimens of silver and Lombardy poplars and Austrian pine.

It is interesting to note that notwithstanding the abundance of splendid available native species, such forms as the soft maple, box elder, cottonwood, silver poplar and Lombardy poplar are commonly planted. Indeed in some cases fine native species were first removed, and these less desirable kinds were set out.

II. Ornamental Plants.

In addition to the ornamental trees and shrubs already discussed, there are numerous native herbaceous plants which are well worthy of cultivation. While not many of them lend themselves readily to use in formal flower-beds, all may be used to advantage in various nooks and corners, to hide unsightly places, such as bogs and sand ridges, to replace weeds along garden fences, and to be mingled in fern-beds, either on the north side of the house, or in well-shaded rock-ferneries.

Perhaps the most adaptable of these species are the columbine, common blue violet, wild phlox, Jacob's ladder (blue-bell), shooting star (*Dodecatheon*) and lungwort (*Mertensia*) but even these will do better in their natural habitats. For convenience the native ornamental herbs are here grouped under their respective habitats, which suggest the kind of places in which they should be cultivated.

1. *Water*.—For artificial or natural ponds the most suitable species are the yellow pond lily (*Castalia*) and the white water crow-foot (*Batrachium*).

2. *Shaded bogs*.—The fringed gentian and greater lobelia are well adapted to seepy banks.

3. *Open bogs and wet meadows*.—For larger bogs the cat-tail and Iris are satisfactory, while for smaller boggy places the oak-leaved fern (*Onoclea*), shield-fern (*Nephrodium thelypteris*), Canada lily, the fringed orchis (*Blephariglotis*) and marsh marigold (*Caltha*) are very desirable.

4. *Open prairie, etc.*—The following more or less showy species are adapted to open places: red lily (*Vagnera stellata*), pasque-flower (*Pulsatilla*), shooting star (*Dodecatheon*), downy gentian (*G. puberula*), prairie phlox, horse mint (*Monarda*), both blazing stars (*Lacinaria*), prairie violet (*Viola pedatifida*), foxglove beard-tongue (*Pentstemon*), bushy goldenrod (*Euthamia*), the wild asters (*A. novae-angliae*, *laevis* and *exiguus*) and the two prairie clovers (*Kuhnistera*). On dry ridges the early buttercup (*Ranunculus fascicularis*) will be attractive because of its early flowering. In open sandy places the corydalis (*Capnoides*), blue-eyed grass (*Sisyrinchium*) and bird-foot violet (*Viola pedata*) will do well.

5. *Moderate shade*.—This naturally grades into both the preceding and the following groups, and therefore is not sharply defined. Its most satisfactory plants are the following: the ostrich fern (*Struthiopteris*), smooth Solomon's seal (*Salomonina*), starry campion (*Silene*), hepatica, rue-anemone (*Syndesmon*), white virgin's bower (*Clematis*), hydrangea, common blue violet (*Viola papilionacea*), spiked willow-herb (*Chamaenerion*), wild phlox (*P. divaricata*), lungwort (*Mertensia*), the goldenrods (*Solidago speciosa* and *serotina*) and *Aster shortii*.

6. *Deep shade*.—Plants of this group are best cultivated in places suited to our ordinary ferns. Our flora includes the following: the lady fern (*Athyrium*), the shield ferns (*Nephrodium*), bladder fern (*Cystopteris fragilis*), maiden-hair fern (*Adiantum*), flowering fern (*Osmunda*) moonwort (*Botrychium*), bellwort (*Uvularia*), dogtooth violet (*Erythronium*), false Solomon's seal (*Vagnera racemosa*), the larger species of *Trillium*, the ladies'-slippers (*Cypripedium*), spring beauty (*Claytonia*), false rue-anemone (*Isopyrum*), crane's-bill (*Geranium*), yellow violet (*Viola pubescens*), the gentians (*G.*

andrewsii and *flavida*), Jacob's ladder (*Polemonium*), may apple (*Podophyllum*), white snake-root (*Eupatorium ageratoides*) and a goldenrod (*Solidago ulmifolia*).

7. *Shaded rocky banks*.—Most of the species in the preceding group may be included here, with the following additional species: the early wake-robin (*Trillium nivale*), nodding wild onion (*Allium cernuum*), both species of *Bicuculla*, American vetch (*Vicia*), blood-root (*Sanguinaria*), water-leaf (*Hydrophyllum virginicum*) and the heart-leaved aster (*A. cordifolius*). The species of the following group may also be planted with the foregoing.

8. *Rocky fernery*.—Well shaded heaps or ledges of limestone, with scant soil intermingled, will produce very pleasing effects. While many of the plants of the two preceding groups may be used in such places, the following are especially suitable: the bulb-bearing fern (*Cystopteris bulbifera*), bishop's cap (*Mitella*) and wild columbine (*Agilegia*).

As all the plants here listed as suitable for cultivation are perennial, with persisting roots or underground stems, it is possible to transplant them from their native habitats. This should be done early in the spring before growth has advanced, or after the plant has matured its fruit. Seed should also be collected, and sowed freely in suitable places. This may be done immediately upon the maturing of the seed, or the seed may be kept until spring. Where the fruit (or seed) is dry it may simply be kept in a box or paper in a moderately dry cool place. Where the fruit is pulpy it may be set in a cool cellar in a small box of sand, which must be kept barely moist, and in the spring sand and seed may be scattered. However, in most of these cases it will require at least two years to mature the plant. Usually a combination of the two methods, transplanting and seeding, will give the best results. In the case of all plants which require shade, leaf-mould should be liberally supplied, and in all cases some attention must be given to weeds, as they will otherwise over-run the wild-flower bed. Blue grass is perhaps the most dangerous of these weeds, and is fatal to practically all wild flowers.

III. Forage Plants.

None of the native or naturalized forage plants take rank with red clover, timothy and blue grass, which are cultivated for this special purpose. Nevertheless there are among them many species which contribute liberally to the forage supply of the county. Indeed during dry seasons all species which are not protected by harsh structures, such as spines, etc., or by poisonous, or at least disagreeable, products with repelling taste and odor, are eaten more or less by cattle. Formerly the native herbs, especially grasses, which covered the prairies, formed valuable pasture and hay, but so little of the original prairie remains that most of these species have disappeared, or are found only sparingly. With the exception of the clovers the best forage plants are grasses. The most valuable species of prairie and meadow were *Cinna*, *Calamagrostis* and the two species of *Andropogon*. Of less value are *Bromus ciliatus* and *kalmii*, and *Agropyron tenerum* and *occidentale*, while coarser, harsher grasses like *Muhlenbergia mexicana* and *glomerata*, *Spartina* and *Leersia* have little beyond bulk to recommend them. Among introduced plants, in addition to the ubiquitous blue grass and timothy, *Agrostis alba*, *Dactylis* and *Setaria glauca* have some fodder value, the last chiefly in stubble fields.

IV. Weeds.

All plants which have sufficient persistence and adaptability to become weeds are of public interest. Among the plants of Winneshiek county there are not only many introduced weeds, but some of the native plants have so far changed their habits that they, too, have become pernicious weeds. Among the most vicious of the former, both because of abundance and persistence, are the following: black bind-weed (*Polygonum convolvulus*), curly dock (*Rumex crispus*), the species of *Amaranthus*, plantain (*Plantago major*), both species of *Brassica*, shepherd's purse (*Bursa*), both sweet clovers (*Melilotus*), round-leaved mallow (*Malva rotundifolia*), wild parsnip (*Pastinaca*), ground ivy (*Glechoma*), chickweed (*Alsine media*), purslane (*Portulaca*), the thornapples (*Datura*), dandelion (*Taraxacum*), prickly lettuce (*Lactuca scariola*), dog-fennel (*Anthemis*), burdock (*Arctium*), field-thistle (*Carduus lanceolatus*), Canada thistle (*C. arvensis*) and the panic grasses (*Panicum crus-galli*

and *glabrum*). Blue grass (*Poa pratensis*) is often a persistent weed. The less pernicious, or less abundant, introduced weeds are: the panic grasses (*Panicum sanguinale*, *capillare* and *dichotomum*), the fox-tail grasses (*Setaria glauca* and *viridis*), *Eragrostis major*, both kinds of chess (*Bromus secalinus* and *racemosus commutatus*), orchard grass (*Dactylis*), St. John's-wort (*Hypericum perforatum*), lamb's quarters (*Chenopodium album*), hedge mustard (*Sisymbrium officinale*), false flax (*Camelina*), low hop clover (*Trifolium procumbens*), sheep-sorrel (*Rumex acetosella*), patience dock (*R. patientia*), Russian thistle (*Salsola*), mullein (*Verbascum*), speedwell (*Veronica peregrina*), hemp (*Cannabis*), black nightshade (*Solanum nigrum*), ground cherry (*Physalis pubescens*), motherwort (*Leonurus*), chicory (*Cichorium*), tansy (*Tanacetum*) and sow-thistle (*Sonchus*).

The following native weeds are more or less troublesome: squirrel-tail grass (*Hordeum*), wire grass (*Juncus tenuis*), water dock (*Rumex brittanica*), smart-weed (*Polygonum pennsylvanicum*), pepper-grass (*Lepidium virginicum*), partridge-pea (*Cassia chamaecrista*), white clover (*Trifolium repens*), three-seeded mercury (*Acalypha*), the native spurge (*Euphorbia*), velvet-leaf (*Abutilon*), yellow oxalis (*Oxalis stricta*), evening primrose (*Onagra biennis*), milkweed (*Asclepias syriaca*), the dodders (*Cuscuta*), nyctelea (*Macrocalyx*), beggar's lice (*Lappula*), the verbenas (*Verbena*) both species of *Scrophularia*, Rugel's plantain (*Plantago rugeli*), slender nettle (*Urtica gracilis*), bur-weed marsh-elder (*Iva*), both ragweeds (*Artemisia trifida* and *artemisaefolia*), cocklebur (*Xanthium*), horse-weed (*Leptilon*), daisy flea-bane (*Erigeron strigosus*), tall cone-flower (*Rudbeckia laciniata*), several species of sunflowers (*Helianthus annuus*, *grosse-serratus*, *rigidus*, etc.), Spanish needles (*Bidens*) and fire weed (*Erechtites*). *Muhlenbergia mexicana* sometimes becomes a weed, and the sand-bur (*Cenchrus*) is often troublesome in sandy fields. For additional notes on all these species see the annotated list.

Individual effort avails but little in the conflict with weeds. Until concerted systematic and intelligent action is taken against them men will continue to suffer great loss from this source. Fire, the plow, and the scythe or mower are the most

effective weapons, and they should be used to prevent, as far as possible, the development of seeds.

V. Medicinal Plants.

This is by no means the least interesting part of the flora. The products of more than forty native species are recognized as official by the U. S. Pharmacopæia. In addition to these, many species are used as substitutes, or as home remedies. Some of the official species are not found in sufficient quantity to be of commercial value, but their occurrence in the county is of interest. Various parts of plants contribute the official product, and the best season of the year for collecting the materials will vary with the part used. It may be stated as a general rule that rhizomes and roots should be collected in late summer or early autumn; the bark of *Ulmus* in early spring, and other barks (of both root and stem) in spring or autumn; the herbs and leaves are usually best just before flowering has commenced; the flowering tops when the first flowers are about to fruit; the flowers just after opening; and the fruits when mature. The distribution in the county, and the habits of the species discussed in this connection are given in the annotated list. The species are here grouped according to the part of the plant yielding the official drug, the official name preceding the name of the plant, which is given in parenthesis.

1. *The herb (leaves and young stems)*.—Oil of Erigeron (*Leptilon canadense*), Pulsatilla (*Pulsatilla hirsutissima*) and Scutellaria (*Scutellaria lateriflora*).

2. *Flowering tops*.—Eupatorium (*Eupatorium perfoliatum*), Hedeoma (*Hedeoma pulegeoides*) and Lobelia (*Lobelia inflata*).

3. *Leaves*.—Chimaphila (*Chimaphila umbellata*), and Rhus Toxicodendron (*Rhus radicans*), the latter fresh.

4. *Flowers*.—Sambucus (*Sambucus canadensis*).

5. *Fruit*.—Rhus Glabra (*Rhus glabra*), Humulus (*Humulus lupulus*), Oil of Juniper (*Juniperus communis*) and Raspberry (*Rubus occidentalis* and *strigosus*).

6. *Seeds*.—Sinapis Nigra (*Brassica nigra*).

7. *Bark of stem*.—Hamamelis Bark (*Hamamelis virginiana*), Canada Balsam (from *Abies balsamea*), Oil of Betula

(from *Betula lenta*), Salicin (from all the species of *Populus* and the larger species of *Salix*), Ulmus (*Ulmus fulva*), Viburnum (*Viburnum opulus*), Viburnum Prunifolium (*Viburnum prunifolium*), Quercus (*Quercus alba*), Prunus Virginiana (*Prunus serotina* and *virginiana*), and Xanthoxylum (*Xanthoxylum americanum*).

8. Bark of root.—Euonymus (*Euonymus atropurpureus*), Juglans (*Juglans cinerea*) and Rubus (*Rubus nigrobaccus* and *procumbens*).

9. Root.—Apocynum (*Apocynum cannabinum*), Asclepias (*Asclepias tuberosa*) and Senega (*Polygala senega*).

10. Rhizome (rootstock).—Calamus (*Acorus calamus*), Caulophyllum (*Caulophyllum thalictroides*), Cypripedium (*Cypripedium hirsutum* and *parviflorum*), Geranium (*Geranium maculatum*), Hydrastis (*Hydrastis canadensis*), Iris (*Iris versicolor*), Leptandra (*Leptandra virginica*), Menispermum (*Menispermum canadense*), Podophyllum (*Podophyllum peltatum*) and Sanguinaria (*Sanguinaria canadensis*).

The common names of all the medicinal plants are given in the annotated list.

VI. Systematic Annotated List of Plants.

In the following list no attempt is made to define species, as this is not necessary in view of the number of available descriptive manuals. Brief notes upon distribution, habits and abundance are given under each species, and locality names are given where specimens were preserved, or where a report was published. In case the record is not based on the writer's own material the name of the collector or recorder follows in parenthesis. Messrs. Savage and Goddard did not publish lists, but the writer examined their material. In all other cases the published record is accepted. The scientific nomenclature for the following plants is in the main that of Britton's Manual,* for ferns that of the writer's paper on Iowa Pteridophyta,† and for grasses that of Pammel's "Grasses of Iowa."‡ These may not in all cases be entirely satisfactory, but they are available to Iowa workers, and, moreover, the question of exact

*Manual of the Flora of the Northern U. S. and Canada, by N. L. Britton, 2nd Ed. 1905.

†Bull. Lab. Nat. Hist., State Univ. of Iowa, Vol. V, 1901, pp. 145-170.

‡Iowa Geol. Sur., part II, Sup. Report for 1903.

nomenclature is of no great importance in a mere geographical list. Gray's Manual is still widely used in this state, and the earlier plant lists published by the Survey were based on it. For that reason, in cases in which the name here adopted differs from that of the Manual, the latter follows in parenthesis.

SUBKINGDOM PTERIDOPHYTA, FERNS, ETC.

Family 1. Equisetaceæ. Scouring Rushes.

Equisetum arvense L. Field Horsetail. Quite common in sandy and clay grounds. Decorah (Goddard), Hesper.

Equisetum robustum A. Braun. Great Scouring-rush. Common on moist banks, etc. Decorah.

Equisetum laevigatum A. Br. Prairie Scouring-rush. Quite common. Decorah (Goddard).

Equisetum hyemale L. Scouring-rush. Not common. Calmar.

Family 2. Ophioglossaceæ.

Botrychium virginianum (L.) Swz. Moonwort. Not rare in deep woods. Hesper, Moneek.

Family 3. Filicaceæ.

Osmunda claytoniana L. Flowering-fern. Common in deep woods. Moneek, Decorah, Hesper.

Polypodium vulgare L. Polypody. Rather rare, on moss-covered ledges along Canoe creek.

Woodsia ilvensis (L.) A. Br. Rare, in crevices of St. Peter sandstone near Hesper.

Onoclea sensibilis L. Oak-leaf Fern. Locally common in moist meadows and ravines. Hesper.

Struthiopteris struthiopteris (L.) (*Onoclea struthiopteris* Hoffm.) Ostrich fern. Locally abundant on alluvial grounds. Along Bear and Canoe creeks.

Cystopteris fragilis (L.) Bernh. Bladder-fern. Quite common in rich woods. Decorah.

Cystopteris bulbifera (L.) Bernh. Bulb-bearing Fern. Very common on rocky banks and ledges. Decorah, Highlandville.

Phegopteris robertiana (Hoffm.) Fee. (*P. calarea* Fee.) Beech Fern. Rather rare, on shaded rocky banks. Decorah (Goddard).

Nephrodium thelypteris (L.) Desv. (*Aspidum thelypteris* Swartz.) Shield-fern. Locally common in open bogs. Hesper.

Nephrodium goldieanum (Hk.) Hk. & Gr. (*Aspidium goldieanum* Hk.) Goldie's Fern. Not common, in rich woods. Decorah (Goddard).

Athyrium filix-foemina (L.) Roth. (*Asplenium filix-foemina* Bernh.) Lady-fern. Common in woods. Hesper, Calmar.

Camptosorus rhizophyllus (L.) Link. Walking Fern. Not common, on mossy ledges. Decorah (Savage); Canoe creek.

Pteridium aquilinum (L.) Kuhn. (*Pteris aquilina* L.) Common Brake. Common in open woods. Hesper, Calmar; Decorah (Fitzpatrick).

Pellaea atropurpurea (L.) Link. Rock Brake. Common on exposed limestone ledges. Decorah, Kendallville, north fork of Bear creek, Highlandville.

Cryptogramma stelleri (Gmel.) Prantl. (*Pellaea gracilis* Hook.) Smaller Cliff-brake. Locally common on shaded limestone ledges. Highlandville; Decorah (Savage).

Cheilanthes feei Moore. (*C. lanuginosa* Nutt.) Lip-fern. Not common, on exposed rocks. Decorah (Calvin).

Adiantum pedatum L. Maidenhair Fern. Common in deep wods. Decorah (Goddard), Hesper.

Family 4. Lycopodiaceæ. Club Mosses.

Lycopodium lucidulum Michx. Club-moss. Reported by Arthur from Hesper. The species occurs in damp woods.

Family 5. Selaginellaceæ.

Selaginella rupestris (L.) Spring. Locally common. Dry rocky soils and sandstone ledges. Hesper, north fork of Bear creek.

SUBKINGDOM SPERMATOPHYTA. FLOWERING PLANTS.

Class 1. Gymnospermæ. Conifers.

Family 1. Pinaceæ.

Pinus strobus L. White Pine. Locally frequent in upland woods especially above rocky ledges, along the Upper Iowa Upper Iowa river. Most abundant near Kendallville and along Pine, Bear and Canoe creeks. Groves of white pine occur in Fremont township.

Abies balsamea (L.) Mill. Balsam Fir. Not rare, along rocky slopes and above ledges along the upper course of the Upper Iowa river. Most abundant near Kendallville and Bluffton.

Juniperus communis L. Juniper. Locally common on dry rocky hilltops. Kendallville, Bluffton, Canoe creek, both forks of Bear creek.

Juniperus virginiana L. Red Cedar. Common on dry hillsides and rocky slopes. Kendallville, Bluffton, Decorah, Canoe creek, both forks of Bear creek, Hesper.

Family 2. *Taxaceæ*.

Taxus canadensis Marsh. American Yew. Locally common on steep shaded slopes and above ledges. Kendallville, Canoe creek, south fork of Bear creek.

Class II. Angiospermæ.

SUB-CLASS I. MONOCOTYLEDONES.

Order I. Graminales.

Family 1. *Gramineæ*. Grasses.

Andropogon provincialis Lam. (*A. furcatus* Muhl.) Blue-stem. Still common where the native prairie flora is not wholly destroyed. Ft. Atkinson.

Andropogon nutans L. (*Chrysopogon nutans* Benth.) Indian Grass. Common in dry borders and openings. Ft. Atkinson, Hesper.

Panicum crus-galli L. Barnyard Grass. A naturalized weed, in waste places. Decorah (Goddard), Calmar, Ft. Atkinson.

Panicum glabrum Gaud. Smooth Crab-grass. Common introduced weed. Freeport.

Panicum sanguinale L. Finger Grass. Introduced weed, in cultivated places. Near Hesper, etc.

Panicum capillare L. Old Witch Grass. Common native weed, in waste and cultivated grounds. Ft. Atkinson.

Panicum latifolium L. Porter's Panicum. Rather common in open woods. Ft. Atkinson.

Panicum scribnerianum Nash. (*P. scoparium* Gray, in part.) Scribner's Panicum. In dry soil. Decorah (Savage).

Panicum dichotomum L. Reported by Fitzpatrick.

Panicum unciphyllum Trin. Finger Grass. In dry places. Decorah (Goddard).

Setaria glauca (L.) Beauv. Yellow Fox-tail. An introduced weed, common in fields and waste places. Ft. Atkinson, Calmar, near Hesper.

Setaria viridis (L.) Beauv. Green Fox-tail. A common introduced weed. Ft. Atkinson, etc.

Setaria germanica Beauv. (*S. italica* Kunth.) German Millet. Introduced. Ft. Atkinson.

Cenchrus tribuloides L. Sand-bur. An annoying native weed in sandy places. Not rare. Ft. Atkinson.

Leersia oryzoides (L.) Swartz. Rice Cut Grass. In open places along ditches and swamps. Ft. Atkinson.

Aristida basiramea Engelm. Tufted Triple Awn-grass. On dry sandy ridges and sandstone ledges. Near Hesper.

Stipa spartea Trin. Porcupine Grass. Reported by Fitzpatrick.

Muhlenbergia mexicana (L.) Trin. Mexican Dropseed. Sometimes a weed. The variety *filiforme* Muhl. was collected at Decorah.

Muhlenbergia glomerata (Willd.) Trin. Marsh Muhlenbergia. Common in moist places. Calmar, Ft. Atkinson, Hesper, Freeport.

Muhlenbergia sylvatica (Muhl.) Torr. Woodland Dropseed. In dry open woods. Ft. Atkinson, Kendallville.

Oryzopsis melanocarpa Muhl. Black-fruited Mountain-rice. Common in woods. Decorah, Canoe creek, Hesper, Ft. Atkinson.

Phleum pratense L. Timothy. Very generally escaped from cultivation. Calmar, etc.

Alopecurus geniculatus L. Marsh Fox-tail. In wet places, locally common. Calmar.

Sporobolus cuspidatus (Torr.) Wood. Prairie Rush-grass. In dry open places. On sandy ridge near Freeport.

Cinna arundinacea L. Indian Reed-grass. In woods, not rare. Hesper.

Agrostis alba L. Red-top. In low grounds. Pammel (l.c.) marks this as occurring in Winneshiek county in the map on p. 166, but mentions no locality in this county in the text.

Calamagrostis canadensis (Michx.) Beauv. Blue Joint. In low meadows. Still quite common. Ft. Atkinson, Calmar.

Spartina cynosuroides (L.) Willd. Slough-grass. Common in wet alluvial soils. Ft. Atkinson.

Bouteloua curtipendula (Michx.) Torr. (*B. racemosa* Lag.) Grama Oats. Locally common in dry sandy or rocky places. Ft. Atkinson, Hesper.

Koeleria cristata (L.) Pers. Koeleria. On dry sandy ridges, etc. Calmar; Decorah (Goddard).

Eragrostis frankii Steud. Short-stalked Meadow-grass. On dry sandy ridges. Freeport.

Eragrostis major Host. Candy Grass. A common introduced weed, in waste and cultivated places. Decorah, etc.

Eragrostis purshii Schrad. Southern Spear-grass. In dry soils. Decorah (Goddard); Ft. Atkinson, Calmar.

Eatonia pennsylvanica (DC.) A. Gray. Eaton's Grass. Moist woods. Decorah, Ft. Atkinson.

Melica mutica Walt. Narrow Melic Grass. Rich soil. Reported by Fitzpatrick.

Dactylis glomerata L. Orchard Grass. Introduced, and common in shaded places. Hesper.

Poa pratensis L. Kentucky Blue Grass. Introduced, and now crowding out most of the common grasses, even in deep woods. Hesper, etc.

Glyceria nervata (Willd.) Trin. Nerved Manna Grass, in wet grounds along creeks, etc. Hesper.

Glyceria americana (Torr.) Pam. (*G. grandis* Wats.) Reed Meadow Grass. In moist places. Hesper (Arthur).

Festuca octoflora Walt. (*F. tenella* Willd.) Slender Fescue Grass. Dry sandy soils, locally common. Calmar, sandstone ledges near Hesper.

Festuca nutans Willd. Nodding Fescue. Frequent, in woods. Hesper.

Bromus purgans L. (*B. ciliatus* var. *purgans* Gray.) Brome Grass. Locally common on dry, sparsely wooded banks. Decorah, Ft. Atkinson.

Bromus ciliatus L. Fringed Brome Grass. Common in open woodlands. Fort Atkinson, Decorah, Canoe creek, Hesper.

Bromus kalmii Gray. Kalm's Brome Grass. In moist thickets. Decorah.

Bromus secalinus L. Cheat. An introduced weed, quite common. Calmar.

Bromus racemosus commutatus L. (*B. asper* L.) Upright Chess. An introduced weed, not rare. Decorah (Savage), Calmar.

Agropyron tenerum Vasey. (*Agropyrum*.) Slender Wheat-grass. In dry, open places. Locally common. Decorah, Calmar.

Agropyron occidentale Scrib. (Not in Gray.) Colorado Blue-stem. Quite common on dry prairie. Calmar, Ft. Atkinson.

Agropyron repens Beauv. (*Agropyrum*.) Couch-grass. A common introduced weed. Calmar.

Agropyron caninum (L.) R. & S. (*Agropyrum*.) Awned Wheat-grass. In rich soil. Introduced(?). Calmar.

Hordeum jubatum L. Squirrel-tail Grass. Very common in pastures, waste places, etc. Calmar, etc.

Elymus striatus Willd. Slender Lyme-grass. Rather common in woods. Decorah, Hesper.

Elymus canadensis L. Canada Lyme-grass. Common, on shaded banks. Decorah.

Elymus robustus S. and S. (*E. canadensis* L., in part.) Robust Wild Rye. Not rare, on moist banks. Calmar.

Asprella hystrix Willd. Bottle-brush Grass. Locally common on wooded banks. Ft. Atkinson, Calmar, Decorah, Hesper.

Family 2. *Cyperaceae*. Sedges.*

Cyperus diandrus Torr. Low Cyperus. Marshy places. Decorah (Cratty).

Cyperus schweinitzii Torr.. Schweinitz's Cypress. In sandy soils. Decorah (Goddard).

Cyperus esculentus L. Yellow Nut-grass. Locally common in moist, open places. Hesper, Ft. Atkinson.

Cyperus filiculmis Vahl. Slender Cyperus. Frequent on dry open ridges, etc. Decorah (Goddard); Hesper.

Eleocharis ovata (Roth) R. & S. Ovoid Spike-rush. In wet soil, quite common. Ft. Atkinson.

Eleocharis palustris (L.) R. & S. Creeping Spike-rush. Swamps and edges of ponds. Decorah (Savage).

*Most of the specimens here listed were examined by Mr. R. I. Cratty.

Scirpus americanus Pers. (*S. pungens* Vahl.) Chairmaker's Rush. In water, etc. Decorah (Savage).

Scirpus validus Vahl. (*S. lacustris* L.) Great Bull-rush. Locally common, in swamps, etc. Moneek.

Scirpus atrovirens Muhl. Dark-green Bull-rush. Common in swamps and bogs. Decorah (Goddard); Hesper, Calmar.

Scirpus cyperinus (L.) Kunth. (*Eriophorum cyperinum* L.) Wool-grass. Frequent, in swamps. Ft. Atkinson.

Carex lupulina Muhl. Hop Sedge. Swamps and ditches. Decorah (Goddard).

Carex hystericina Muhl. Porcupine-sedge. Common in bogs. Hesper.

Carex stricta Lam. Tussock Sedge. In swamps. Decorah (Goddard).

Carex longirostris Torr. Long-beaked Sedge. On moist shaded banks. Decorah (Goddard).

Carex amphibola Steud. (*C. grisea* var. (?) *rigida* Bailey.) Narrow-leaved Sedge. In dry soil. Decorah (Goddard).

Carex albursina Sheldon. (*C. laxiflora* var. *latifolia* Boott.) White-beaked Sedge. Not rare, on shaded slopes. Decorah.

Carex pennsylvanica Lam. Early Sedge. Common in dry open woods. Decorah (Goddard).

Carex stipata Muhl. Awl-pointed Sedge. Reported by Fitzpatrick.

Carex gravida Bailey. Heavy Sedge. In moist places. Decorah (Goddard). This is the form which Cratty reports as var. *laxiflora* Bailey.

Carex vulpinoidea Michx. Fox Sedge. Common along edges of swamps and in wet meadows. Hesper, Calmar.

Carex rosea Schk. Stellate Sedge. In woods. Decorah (Goddard).

Carex sparganioides Muhl. Bur-seed Sedge. Not common, in moist woods. Decorah.

Carex cephalophora Muhl. Oval-headed Sedge. In dry places. Decorah (Goddard).

Carex tribuloides Wahl. Blunt Broom Sedge. Common in meadows. Calmar.

Carex cristatella Britt. (*C. tribuloides* var. *cristata* Bailey.) Crested Sedge. Frequent, in meadows and moist shaded places. Calmar.

Carex tenera Dewey. (*C. straminea* var. *aperta* Boott.) Marsh Straw-sedge. Reported by Fitzpatrick.

Carex festucacea Willd. (*C. straminea* var. *brevior* Dewey.) Fescue Sedge. Decorah (Goddard).

Order 2. Pandanales.
Family 1. Typhaceæ.

Typha latifolia L. Common Cat-tail. In swamps. Not rare. Decorah (Cratty), Moneek.

Family 2. Sparganiaceæ.

Sparganium eurycarpum Engelm. Common Bur-reed. In marshy places. Reported by Fitzpatrick.

Order 3. Naiadales.
Family 1. Naidaceæ.

Potamogeton foliosus Raf. (*P. pauciflorus* Pursh.) Leafy Pondweed. Common in ponds. Ft. Atkinson.

Potamogeton lonchites Tuck. (*P. fluitans* Roth.) Long-leaved Pondweed. Upper Iowa river (Fitzpatrick).

Family 2. Alismaceæ.

Alisma plantago-aquatica L. (*A. plantago* L.) Water-plantain. Common in shallow water or mud. Decorah (Cratty), Hesper.

Sagittaria latifolia Willd. (*S. variabilis* Engelm.) Broad-leaved Arrowhead. Common in mud and shallow water along ponds and sluggish streams. Decorah, Ft. Atkinson.

Sagittaria rigida Pursh. (*S. heterophylla* Pursh.) Sessile-fruited Arrowhead. Reported by Fitzpatrick.

Family 3. Vallisneriaceæ.

Philotria canadensis (Michx.) Britt. (*Elodea canadensis* Michx.) Ditchmoss. Common in ponds. Decorah (Cratty).

Vallisneria spiralis L. Eel-grass. In the Upper Iowa river. Bluffton (Cratty).

Order 4. Arales.
Family 1. Araceæ. Arums.

Arisaema triphyllum (L.) Torr. Indian Turnip. Common in rich woods. Decorah (Savage, Cratty); Calmar.

Arisaema dracontium (L.) Schott. Dragon-root. Less abundant, in alluvial woods. Decorah (Cratty).

Spathyema foetida. (L.) Raf. (*Symplocarpus foetidus* Salisb.) Skunk Cabbage. Common in shaded bogs. Decorah (Cratty), Bluffton, etc.

Acorus calamus L. Calamus. Locally common in swamps and bogs. Decorah (Cratty), Hesper, said to be introduced.

Family 2. *Lemnaceæ*. Duckweeds.

Spirodela polyrrhiza (L.) Schleid. Greater Duckweed. Floating on still water, abundant locally. Decorah (Cratty).

Lemna trisulca L. Duckweed. Not rare, in still water. Decorah (Cratty).

Order 5. *Xyridales*.
Family 1. *Commelinaceæ*.

Tradescantia bracteata Small. (*T. virginica* L., in part.) Long-bracted Spiderwort. Common in sandy soil. Decorah (Savage); Ft. Atkinson.

Tradescantia reflexa Raf. (*T. virginica* L., in part.) Reflexed Spiderwort. Common, in sandy soil. Calmar.

Order 6. *Liliales*.
Family 1. *Juncaceæ*. Rushes.

Juncus tenuis Willd. Slender Rush. In hard soils, common. Calmar; Decorah (Goddard).

Juncus vaseyi Engelm. Vasey's Rush. Not rare. In moist open places. Ft. Atkinson.

Juncus nodosus L. Knotted Rush. Common along edges of ponds and in open boggy places. Ft. Atkinson.

Family 2. *Melanthaceæ*.

Zygadenus elegans Pursh. Glaucous *Zygadenus*. Not common. Decorah (Goddard).

Uvularia grandiflora J. E. Smith. Common Bell-wort. Common in rich woods. Hesper, Ft. Atkinson; Decorah (Goddard).

Uvularia sessilifolia L. (*Oakesia sessilifolia* Wats.) Sessile-leaved Bell-wort. Reported by Fitzpatrick.

Family 3. *Liliaceæ*. Lilies.

Allium tricoccum Ait. Wild Leek. Locally common in rich woods. Hesper.

Allium cernuum Roth. Nodding Wild Onion. On shaded banks, etc. Not rare. Hesper; Decorah (Arthur).

Allium stellatum Ker. Prairie Wild Onion. Common on rocky banks and slopes. Hesper.

Lilium umbellatum Pursh. (*L. philadelphicum* L., in part.) Western Red Lily. Formerly very abundant, but now restricted by cultivation of prairies. On dry prairie. Hesper.

Lilium canadense L. Wild Yellow Lily. Locally common in prairie bogs and meadows. Calmar.

Erythronium americanum Ker. Yellow Adder's Tongue. In rich woods. Hesper (Arthur).

Erythronium albidum Nutt. White Dog-tooth Violet. Reported by Fitzpatrick.

Family 4. *Convallariaceæ*.

Asparagus officinalis L. Asparagus. Naturalized in woods and elsewhere. Decorah.

Vagnera racemosa (L.) Morong. (*Smilacina racemosa* Desf.) Wild Spikenard. Common in rich woods and thickets. Calmar.

Vagnera stellata (L.) Morong. (*Smilacina stellata* Desf.) Smaller False Solomon's Seal. Common on moist prairie, etc. Calmar.

Unifolium canadense (Desf.) Greene. *Maianthemum canadense* Desf.) False Lily-of-the-Valley. Rather common in rich woods. Decorah (Savage), Hesper.

Salomonina commutata (R. & S.) Britt. (*Polygonatum giganteum* Diet.) Smooth Solomon's Seal. In moist soils, on banks, along borders, etc. Common. Decorah (Savage), Calmar, Ft. Atkinson.

Trillium nivale Rid. Early Wake-robin. Not rare, on shaded banks and slopes. Decorah (Savage), Bluffton.

Trillium erectum L. Ill-scented Wake-robin. Locally common on wooded banks. Decorah (Arthur), Ft. Atkinson.

Family 5. *Smilacæ*. Smilax.

Smilax herbacea L. Carrion-flower. Common in thickets, etc. Decorah (Savage), Calmar.

Smilax ecirrhata (Engelm.) S. Wats. Upright Smilax. Reported by Fitzpatrick.

Smilax hispida Muhl. Hispid Greenbrier. Common in woods and thickets. Decorah (Savage).

Family 6. *Amaryllidaceæ*.

Hypoxis hirsuta (L.) Cov. (*H. erecta* L.) Star-grass. In open woods, etc. Common. Decorah (Savage).

Family 7. *Dioscoreaceæ*.

Dioscorea villosa L. Wild Yam-root. Reported by Fitzpatrick.

Family 8. *Iridaceæ*.

Iris versicolor L. Blue Flag. Locally common in marshes and wet meadows. (Fitzpatrick).

Sisyrinchium angustifolium Miller. Blue-eyed Grass. Common in open, especially sandy places. Freeport, Hesper.

Order 7. Orchidales.

Family 1. *Orchidaceæ*, Orchids.

Cypripedium reginae Walt. (*C. spectabile* Salisb.) Showy Lady's slipper. Not common, in deep moist woods. Bluffton. *Cypripedium candidum* Willd. Small White Lady's Slipper. In bogs, rare. Decorah (on authority of Holway).

Cypripedium hirsutum Mill. (*C. pubescens* Willd.) Large Yellow Lady's Slipper. Rather common, in deep woods. Canoe creek, Decorah, Hesper.

Cypripedium parviflorum Salisb. Small Yellow Lady's Slipper. With the preceding, but less common. Scarcely a distinct species. Hesper.

Galeorchis spectabilis (L.) Rydb. (*Orchis spectabilis* L.) Showy Orchis. In rich woods, not common. Canoe creek, Hesper.

Coeloglossum bracteatum (Willd.) Parl. (*Habenaria bracteata* R. Br.) Long-bracted Orchis. Reported by Fitzpatrick.

Limnorchis hyperborea (L.) Rydb. (*Habenaria hyperborea* R. Br.) Leafy Green Orchis. Rare, in deep upland woods. Hesper (Arthur).

Lysias hookeriana (A. Gray) Rydb. (*Habenaria hookeri* Torr.) Hooker's Orchis. Locally common in deep upland woods. Hesper, Canoe creek.

Blephariglottis leucophaea (Nutt.) Rydb. (*Habenaria leucophaea* Gray.) White Fringed-Orchid. Prairie bogs and wet meadows. Not common. Ft. Atkinson.

Gyrostachys gracilis (Bigel.) Kuntze. (*Spiranthes gracilis* Bigel.) Slender Ladies' Tresses. Decorah (Arthur).

Peramium pubescens (Willd.) MacM. (*Goodyera pubescens* R. Br. Rattle-snake Plantain. In deep upland woods. Not rare. Hesper.

Acroanthes unifolia (Michx.) Raf. (*Microstylis ophioglossoides* Nutt.) Green Adder's Tongue. In deep woods. Decorah (Arthur), Hesper (Arthur).

Leptorchis liliifolia (L.) Kuntze. (*Liparis liliifolia* Rich.) Large Twayblade. Not rare. In deep upland woods. Kendallville, Hesper.

Aplectrum hyemale (Muhl.) Torr. Putty-root. Locally common in deep woods southward. Ft. Atkinson.

Corallorhiza multiflora Nutt. Large Coral-root. Very common in deep upland woods northward. Hesper.

SUB-CLASS II. DICOTYLEDONES.

Series I.

Order 1. Salicales.

Family Salicaceae. Poplars; Willows.

Populus alba L. Silver-leaf Poplar. Naturalized in waste places. Decorah.

Populus candicans Ait. (*P. balsamifera* var. *candicans* Gray.) Balm of Gilead. Seemingly native on banks and slopes along the Upper Iowa. Kendallville, Calmar (cultivated).

Populus deltoides Marsh. (*P. monilifera* Ait.) Cottonwood. Common along streams. Decorah (Savage), Calmar. Also observed at Ft. Atkinson, Kendallville, Bluffton, etc.

Populus grandidentata Michx. Large-toothed Aspen. In upland woods. Not common. Decorah (Savage), Hesper, north fork of Bear creek. Also observed at Moneek. Kendallville, Canoe creek, and south fork of Bear creek.

Populus tremuloides Michx. American Aspen. Very common in thickets, upland woods, etc. Decorah. Observed at all the other localities in the county.

Salix nigra Marsh. Black Willow. Not rare. In low grounds along Turkey river. Ft. Atkinson. Observed at Bluffton.

Salix amygdaloides Anders. Almond-leaved Willow. Common along streams, etc. Decorah, Fort Atkinson (a form approaching *S. nigra*). Observed at Canoe creek, both forks of Bear creek, Bluffton and Kendallville.

Salix lucida Muhl. Shining Willow. Locally common in wet grounds. Ft. Atkinson, Freeport (some are small trees). Observed at Canoe creek and Bluffton.

Salix alba L. White Willow. Occasionally naturalized. Decorah (Savage).

Salix cordata Muhl. Heart-leaved Willow. Very common in low grounds. Kendallville, Hesper. Observed at Canoe creek, etc.

Salix missouriensis Bebb. Missouri Willow. (Probably included with *S. cordata* by Gray.) In low grounds, not rare. Decorah, Hesper.

Salix interior Rowlee. (*S. longifolia* Muhl.) Sandbar Willow. Common on sandbars, etc. Decorah. Observed at Hesper, Canoe creek, and Ft. Atkinson.

Salix petiolaris J. E. Smith. Slender Willow. In low grounds. Not common. Calmar.

Salix discolor Muhl. Glaucous Willow, Pussy Willow. Common in bogs, etc. Decorah (Savage), Kendallville, Canoe creek, Hesper, etc.

Salix ericocephala Michx. Pussy Willow. (Included with the preceding by Gray.) Rather common, in low grounds. Decorah, Hesper. (The latter may be a hybrid, *S. humilis* + *S. discolor*.)

Salix humilis Marsh. Prairie Willow. Common in dry open places. Calmar, Decorah, north fork of Bear creek. Also observed at Canoe creek, Moneek and Ft. Atkinson.

Order 2. Juglandales.
Family Juglandaceæ.

Juglans nigra L. Black Walnut. In rich grounds. Decorah (Savage). Also observed at Hesper and Moneek.

Juglans cinerea L. Butternut. Rather common, on lower slopes, etc. Decorah. Also observed at all the other localities excepting Calmar.

Hicoria minima (Marsh.) Britt. (*Carya amara* Nutt.) Bitternut. In rather rich soil, quite common. Decorah, Moneek. Also observed at Hesper, Canoe creek, both forks of Bear creek, Bluffton and Kendallville.

Hicoria ovata (Mill.) Britt. (*Carya alba* Nutt.) Shell-bark Hickory. Rather abundant, in rich soil. Decorah. Also observed at Hesper, Canoe creek, both forks of Bear creek, Bluffton, Kendallville and Moneek.

Order 3. Fagales.

Family 1. Betulaceæ.

Carpinus caroliniana Walt. Blue Beech. Quite common on moist banks, etc. Canoe creek, Hesper. Also observed at Kendallville, and both forks of Bear creek.

Ostrya virginiana (Mill.) Willd. Iron-wood. Common in higher woods. Decorah, Hesper, Ft. Atkinson. Also at all other localities here named except Calmar.

Corylus americana Walt. Hazel-nut. Common in thickets, etc. Kendallville, Hesper, Calmar. Observed at all other localities.

Corylus rostrata Ait. Beaked Hazel-nut. Very rare. Found only at Kendallville, in rich soil.

Betula papyrifera Marsh. Canoe Birch. Common on rocky slopes, etc. Hesper, Canoe creek, both forks of Bear creek, Kendallville, Bluffton, Decorah.

Alnus incana (L.) Willd. Hoary Alder. On rocky banks and slopes, not abundant. Bluffton, Coldwater Spring, Canoe creek.

Family 2. Fagaceæ.

Quercus rubra L. Red Oak. Quite common, chiefly in upland woods. Typical specimens were obtained at Decorah, Freeport, Hesper, Highlandville and Plymouth Rock. A variety with typical leaves, but narrow acorns with convex or almost obconical cups was found at Moneek and Hesper. It may be a distinct species.

Quercus schneckii Britt. Schneck's Red Oak. (Not in Gray. Sargent calls this *Q. terana* Buckl.) This and the two following species have been indiscriminately reported as *Q. coccinea* in Iowa. The writer has not been able to find true *Q. coccinea*

Muench. in the state. The inner bark of the three species here recognized is yellow, never red. Common in upland woods. Specimens from Canoe creek, Kendallville, Moneek and Decorah seem to be typical, while others from Hesper, Moneek, Freeport, Calmar and Ft. Atkinson approach *Q. velutina* in the character of the acorn. The series is interesting, and needs further study.

Quercus borealis Michx. (*Q. coccinea* var. *ambigua* Gray.) Gray Oak. Specimens which appear to be typical, and which agree exactly with Engelmann's specimens labelled *Q. ambigua* in the herbarium of the St. Louis Botanical Garden, were collected at Hesper and Sattre, and observed throughout the northeastern part of the county in upland groves remote from streams, and frequently in the company of the preceding species. The leaves are like the moderately lobed, broad, typical leaves of *Q. rubra*, while the acorns resemble those of *Q. velutina*, but the scales of the cup are appressed. The bark is comparatively smooth, thin and very brittle, and the general aspect of the tree is different from that of any other Iowa oak. Sargent refers *Q. ambigua* (which is the same as this species) to *Q. rubra*, but judging from the specimens here reported this is certainly an error.

Quercus velutina Lam. (*Q. coccinea* var. *tinctoria* Gray.) Yellow Oak; Black Oak. This species is rather common in the southern part of the county. It was obtained at Decorah, and observed at Ft. Atkinson, etc. The species is replaced northward by the two preceding species.

Quercus alba L. White Oak. Common in upland groves and deep woods, especially near streams. Decorah (Savage), Bluffton, Highlandville. Also observed at Hesper, Canoe creek, both forks of Bear creek, Kendallville, Moneek and Ft. Atkinson. Our most valuable forest tree.

Quercus macrocarpa Michx. Bur Oak. Common in upland woods. Collected at Decorah and Calmar, and observed in all parts of the county where collections were made. This tree is very variable in the size and form of the leaves and acorns, according to habitat.

Order 4. Urticales.

Family 1. *Ulmaceae*.

Ulmus americana L. White Elm. Common in alluvial woods Decorah, north fork of Bear creek. Observed at all the stations.

Ulmus racemosa Thomas. Cork Elm. Rather common, on rocky slopes. Canoe creek, north fork of Bear creek. Observed at Highlandville and Bluffton.

Ulmus fulva Michx. Red Elm; Slippery Elm. Common in upland woods. Decorah, Kendallville.

Celtis crassifolia Lam. (*C. occidentalis* L., in part.) Hackberry. Rather common, often on higher grounds. Decorah. Observed at Bluffton and Kendallville.

Family 2. *Moraceae*.

Cannabis sativa L. Hemp. Common in waste places. Introduced. Ft. Atkinson, etc.

Family 3. *Urticaceae*.

Urtica gracilis Ait. Slender Nettle. Common in rather dry places. Canoe creek, Calmar.

Urticastrum divaricatum (L.) Kuntze. (*Laportea canadensis* Gaud.) Wood Nettle. In rich woods. Common. Hesper, etc.

Adicea pumila (L.) Ref. (*Pilea pumila* Gray.) Richweed. Low places, quite common. Hesper.

Parietaria pennsylvanica Muhl. Pennsylvania Pellitory. Dry rocky banks. Locally common. Decorah.

Order 5. Santalales.

Family *Santalaceae*.

Comandra umbellata (L.) Nutt. Bastard Toadflax. Locally common on dry hills and prairies. Decorah (Savage).

Order 6. Aristolochiales.

Family *Aristolochiaceae*.

Asarum acuminatum (Ashe) Bick. (*A. canadense* L., in part.) Longtipped Wild Ginger. Common on shaded mossy (rocky) banks. Decorah, Hesper.

Asarum reflexum Bick. (*A. canadense* L., in part.) Short-lobed Wild Ginger. Locally common in alluvial woods. Decorah.

Order 7. Polygonales.

Family Polygonaceæ.

Rumex acetosella L. Sheep Sorrel. Common in dry fields and waste places. Calmar, Hesper.

Rumex verticillatus L. Swamp Dock. In swamps. Reported by Fitzpatrick.

Rumex altissimus Wood. Tall Dock. Common in low places. Decorah (Savage), etc.

Rumex patientia L. Patience Dock. Common in waste places. Introduced. Calmar.

Rumex brittanica L. Great Water-dock. Common in wet places. Calmar, etc.

Rumex crispus L. Curled Dock. Introduced. Decorah (Arthur).

Fagopyrum fagopyrum (L.) Karst. (*F. esculentum* Moench.) Buckwheat. Not uncommonly naturalized in waste places. Ft. Atkinson, etc.

Polygonum amphibium L. Water Persicaria. Aquatic. Reported by Fitzpatrick.

Polygonum emersum (Michx.) Britt. (*P. muhlenbergii* S. Wats.) Swamp Persicaria. Locally common in ponds. Ft. Atkinson.

Polygonum incarnatum Ell. (*P. lapathifolium* var. *incarnatum* Wats.) Pink Persicaria. Common in wet soils. Decorah, Ft. Atkinson.

Polygonum lapathifolium L. Pale Persicaria. Common in waste places. Introduced.

Polygonum pennsylvanicum L. Pennsylvania Smartweed. Common in moist soil. Decorah, Hesper, Calmar.

Polygonum persicaria L. Lady's Thumb. Introduced weed. Calmar, etc.

Polygonum hydropiper L. Smartweed. In moist grounds, common. Ft. Atkinson, etc.

Polygonum virginianum L. Virginia Knotweed. Rather common in woods. Decorah (Goddard), Canoe creek.

Polygonum aviculare L. Doorweed. A common introduced door-yard weed. Calmar, Hesper, etc.

Polygonum camporum Meisn. Prairie Knotweed. In dry, sandy soil. Near Hesper.

Polygonum tenue Michx. Slender Knotweed. Locally common in dry sandy soil. Decorah (Holway), the St. Peter sandstone region near Hesper.

Polygonum douglasii Greene. Douglas' Knotweed. (Not included in Gray.) With the preceding in the vicinity of Hesper, and even more abundant.

Polygonum convolvulus L. Black Bindweed. A common introduced weed. Calmar, Hesper, etc.

Polygonum scandens L. (*P. dumetorum* var. *scandens* Gray.) Climbing False Buckwheat. Reported by Fitzpatrick.

Polygonum sagittatum L. Arrow-leaved Tear-thumb. In low grounds. Reported by Fitzpatrick.

Order 8. Chenopodiales.

Family 1. Chenopodiaceæ.

Chenopodium album L. Lamb's Quarters. A common introduced weed. Reported by Fitzpatrick.

Chenopodium glaucum L. Oak-leaved Goosefoot. A common introduced weed. Calmar.

Chenopodium hybridum L. Maple-leaved Goosefoot. Common in woods. Decorah.

Salsola tragus. Russian Thistle. Introduced. Not common. Calmar.

Salsola kali L. Salt-wort.

Family 2. Amaranthaceæ.

Amaranthus retroflexus L. Rough Pigweed. A very common introduced weed. Ft. Atkinson, Decorah (Goddard).

Amaranthus blitoides S. Wats. Prostrate Pigweed. Introduced from the west. A common weed. Ft. Atkinson, etc.

Family 3. Nyctaginaceæ.

Allionia nyctaginea Michx. (*Oxybaphus nyctagineus* Sweet.) Wild Four-o'clock. Common in dry open places. Calmar.

Family 4. Aizoaceæ.

Mollugo verticillata L. Carpet-weed. Common in sandy and waste grounds. Ft. Atkinson.

Family 5. Portulacaceæ.

Claytonia virginica L. Spring Beauty. In rich alluvial woods. (Fitzpatrick.)

Portulaca oleracea L. Purslane. A common introduced weed. Calmar, etc.

Family 6. *Caryophyllaceae*.

Agrostemma githago L. (*Lychnis githago* Scop.) Introduced weed. Reported by Fitzpatrick.

Silene stellata (L.) Ait. Starry Campion. Along borders of thickets, etc. Common. Calmar.

Silene alba Muhl. Western White Campion. In moist grounds, along borders of thickets. Not rare. Calmar, etc.

Silene antirrhina L. Sleepy Catchfly. In dry places. Reported by Fitzpatrick.

Lychnis alba Mill. (*L. vespertina* Sibth.) White Campion. Introduced weed. Decorah (Arthur), Hesper.

Saponaria officinalis L. Soapwort. Introduced. Locally common in waste places, etc. Ft. Atkinson.

Vaccaria vaccaria (L.) Britt. (*Saponaria vaccaria* L.) Cowherb. Introduced. Reported by Fitzpatrick.

Alsine media L. (*Stellaria media* Smith.) Common Chickweed. Common weed in waste places, etc. Introduced. Hesper, etc.

Alsine longifolia (Muhl.) Britt. (*Stellaria longifolia* Muhl.) Long-leaved Stitchwort. Common in wet meadows, etc. Decorah (Goddard).

Cerastium longipedunculatum Muhl. (*C. nutans* Raf.) Nodding Chickweed. Common in moist woods, etc. Decorah (Savage), Hesper, Ft. Atkinson.

Cerastium arvense L. Field Chickweed. Reported by Fitzpatrick.

Cerastium arvense oblongifolium (Torr.) Holl. & Britt. In rocky places. This variety was founded on Winneshiek county material.* Decorah (Holway).

Moehringia lateriflora (L.) Fenzl. (*Arenaria lateriflora* L.) In moist, shaded places. Decorah (Savage).

*See Bull. Torrey Bot. Club, Vol. XIV, p. 48, 1887.

Order 9. Ranales

Family 1. *Nymphaeaceae*.

Nymphaea advena Sol. (*Nuphar advena* Ait. f.) Yellow Pond-lily. In permanent ponds. Not common. Ft. Atkinson.

Castalia odorata (Dry.) W. & W. (*Nymphaea odorata* Ait.) Sweet-scented White Water-lily. In permanent ponds. Rare. Ft. Atkinson.

Family 2. *Ranunculaceae*.

Hydrastis canadensis L. Orange-root Golden Seal. Rare, in deep woods. Canoe creek.

Caltha palustris L. Marsh-marigold. In bogs and wet meadows. Not common. Hesper.

Isopyrum biternatum (Raf.) T. & G. False Rue-anemone. In rich alluvial woods. Decorah (Savage).

Actaea rubra (Ait.) Willd. (*A. spicata* var. *rubra* Ait.) Red Baneberry. Not rare, in deep woods. Hesper, Decorah.

Actaea alba (L.) Mill. White Baneberry. Rich woods Hesper.

Aquilegia canadensis L. Wild Columbine. Common on shaded rocks. Decorah (Savage), Calmar.

Delphinium carolinianum Walt. (*D. azureum* Michx.) Prairie Larkspur. Still frequent on rather dry prairie west of Ft. Atkinson.

Anemone cylindrica A. Gray. Long-fruited Anemone. Common on prairie and in open places. Calmar.

Anemone virginiana L. Tall Anemone. Common in open woods. Calmar, etc.

Anemone canadensis L. (*A. pennsylvanica* L.) Pennsylvania Anemone. In moist grounds. Common. Decorah (Savage), Calmar.

Anemone quinquefolia L. (*A. nemorosa* L.) Wood Anemone. In woods. Reported by Fitzpatrick.

Hepatica acuta (Pursh.) Britt. (*H. acutiloba* DC.) Heart Liver-leaf. Common on wooded banks and slopes. Decorah (Savage), Hesper.

Syndesmon thalictroides (L.) Hoffm. (*Anemonella thalictroides* Spach.) Rue-anemone. In open woods. (Fitzpatrick).

Pulsatilla hirsutissima (Pursh.) Britt. (*Anemone patens* var. *nuttalliana* Gray.) Pasque-flower. On prairies and dry ridges. Not rare. Bluffton, Decorah.

Clematis virginiana L. Virgin's Bower. Common along borders of thickets, etc. Ft. Atkinson, Decorah, Hesper.

Atragene americana Sims. (*Clematis verticillaris* DC.) Purple Virgin's Bower. Shaded rocky banks. Found at Decorah by Holway and Goddard.

Ranunculus ovalis Raf. (*R. rhomboideus*.) Prairie Crowfoot. In open places. Reported by Fitzpatrick.

Ranunculus abortivus L. Kidney-leaved Crowfoot. In moist shaded ground. Common. Decorah (Savage), etc.

Ranunculus recurvatus Poir. Hooked Crowfoot. In rich woods, locally frequent. Hesper.

Ranunculus pennsylvanicus L. f. Bristly Crowfoot. Reported by Fitzpatrick.

Ranunculus septentrionalis Poir. Marsh Butter-cup. Common in low grounds. Decorah (Savage).

Ranunculus fascicularis Muhl. Early Butter-cup. Reported by Fitzpatrick.

Batrachium trichophyllum (Chaix.) Bossch. (*Ranunculus aquatilis* var. *trichophyllum* Gray.) Common White Water Crowfoot. Abundant in Bear creek near Highlandville.

Thalictrum dioicum L. Early Meadow-rue. Common on wooded slopes. Decorah (Savage), Hesper.

Thalictrum purpurascens L. Purplish Meadow-rue. Common in open places. Calmar, Decorah (Goddard), etc.

Family 3. *Berberidaceæ*.

Caulophyllum thalictroides (L.) Michx. Blue Cohosh. Rather common, in deep woods. Hesper.

Podophyllum peltatum L. May Apple. In deep woods. Not common. (Fitzpatrick.)

Family 4. *Menispermaceæ*.

Menispermum canadense L. Moonseed; Yellow Parilla. Quite common, in woods. Decorah (Savage), Hesper.

Order 10. Papaverales

Family 1. *Papaveraceæ*.

Sanguinaria canadensis L. Bloodroot. On well-wooded slopes and banks, not rare. Decorah (Savage), Hesper.

Bicuculla cucullaria (L.) Millsp. (*Dicentra cucullaria* DC.) Dutchman's Breeches. In rich woods. Decorah (Goddard).

Bicuculla canadensis (Goldie.) Millsp. (*Dicentra canadensis* DC.) Squirrel Corn. Reported by Fitzpatrick.

Capnoides micranthum (Engelm.) Britt. (*Corydalis micrantha* Gray.) Small-flowered Corydalis. In woods. Decorah (Goddard).

Family 2. *Cruciferae*.

Lepidium virginicum L. Wild Pepper-grass. A common weed. Hesper, Calmar, etc.

Lepidium apetalum L. (*L. intermedium* Gray.) Apetalous Pepper-grass. A weed. Decorah (Savage).

Sisymbrium officinale (L.) Scop. Hedge Mustard. A common naturalized weed. Calmar, etc.

Sinapis alba L. (*Brassica alba* Boiss.) White Mustard. An introduced weed. Not common. Calmar.

Brassica nigra (L.) Koch. Black Mustard. A common introduced weed. Calmar, etc.

Brassica arvensis (L.) B. S. P. (*B. sinapistrum* Boiss.) More common than the preceding, and observed at several stations. (Fitzpatrick.)

Isodanthus pinnatifidus (Michx.) Steud. (*Thelypodium pinnatifidum* Wats.) Purple Rocket. Reported by Fitzpatrick.

Roripa palustris (L.) Bess. (*Nasturtium palustre* DC.) Marsh Cress. In low grounds. Calmar.

Roripa nasturtium (L.) Rusby. (*Nasturtium officinale* R. Br.) Water Cress. In clear streams. Canoe creek, Decorah.

Roripa armoracia (L.) A. S. Hitch. (*Nasturtium armoracia* Fries.) Horse-radish. Run wild. (Fitzpatrick.)

Cardamine bulbosa (Schreb.) B. S. P. (*C. rhomboidea* DC.) Spring Cress. In bogs, etc. Decorah (Savage).

Cardamine hirsuta L. Bitter Cress. In moist grounds. (Fitzpatrick.)

Dentaria laciniata Muhl. Pepper-root. Rich woods. (Fitzpatrick.)

Bursa bursa-pastoris (L.) Britt. (*Capsella bursa-pastoris* Moench.) Shepherd's Purse. A very common introduced weed. Decorah (Savage), Calmar, etc.

Camelina sativa (L.) Crantz. False Flax. An introduced weed. (Fitzpatrick.)

Draba caroliniana Walt. Carolina Whitlow-grass. In sandy places. (Fitzpatrick.)

Sophia intermedia Rydb. (*Sisymbrium canescens* Nutt., in part.) Western Tansy-mustard. On dry ridges, etc. Decorah (Savage).

Arabis lyrata L. Lyre-leaved Rock-cress. On rocks, etc. Locally common. Decorah.

Arabis dentata T. & G. Toothed Rock-cress. In rocky places. Decorah (Savage).

Arabis laevigata (Muhl.) Poir. Smooth Rock-cress. On rocky slopes, etc. Decorah (Savage).

Arabis canadensis L. Sickie-pod. In woods, etc. (Fitzpatrick.)

Arabis brachycarpa (T. & G.) Britt. (*A. confinis* S. Wats.) Purple Rock-cress. In rocky places. (Fitzpatrick.)

Erysimum cheiranthoides L. Worm-seed Mustard. Along borders and on banks. Not rare. Decorah, etc.

Berteroa incana (L.) DC. Hoary Alyssum. Not common. Decorah.

Family 3. *Capparidaceæ*.

Polanisia trachysperma T. & G. Large-flowered Clammy-weed. In sandy places. Ft. Atkinson.

Order 11. *Rosales*.

Family 1. *Penthoraceæ*.

Penthorum sedoides L. Ditch Stonecrop. In low wet places. Locally common. Decorah, etc.

Family 2. *Parnassiaceæ*.

Parnassia caroliniana Michx. Grass of Parnassus. Quite rare, in bogs near Hesper.

Family 3. *Saxifragaceæ*.

Saxifraga pennsylvanica L. Swamp Saxifrage. Not rare, in bogs. Hesper.

Sullivantia sullivantii (T. & G.) Britt. (*S. ohionis* T. & G.)
Sullivantia. Locally common, on faces of cliffs. Highlandville.

Heuchera hispida Pursh. Rough Heuchera; Alum-root. Common, on prairie. Calmar.

Mitella diphylla L. Two-leaved Bishop's Cap. Common, on shaded banks. Decorah (Savage), Hesper.

Chrysosplenium iowensis Rydb. (*C. alternifolium* L.) Iowa Golden Saxifrage. Rare, on shaded mossy banks. Decorah (Goddard). Also found in Dubuque county.

Family 4. *Grossulariaceae*.

Ribes cynosbati L. Wild Gooseberry. Locally common, on rocky banks. Decorah. Also observed at Canoe creek, both forks of Bear creek, Highlandville and Ft. Atkinson.

Ribes missouriensis Nutt. (*R. gracile* Michx., in part.) Missouri Gooseberry. Common on banks and in open thickets. Decorah, Hesper. Also observed at Canoe creek and Ft. Atkinson.

Ribes floridum L'Her. Wild Black Currant. Not rare, in low rich woods. Decorah. Also observed at Hesper, Canoe creek, and north fork of Bear creek.

Ribes rubrum L. Red Currant. Rare, in deep woods at Hesper. May be introduced, but appears to be native.

Family 5. *Platanaceae*.

Platanus occidentalis L. Sycamore; Plane-tree. In low woods. Rare, observed only at Bluffton.

Family 6. *Rosaceae*.

Opulaster intermedius Rydb. (*Physocarpus opulifolius*, in part.) Common on wooded banks and in thickets. Decorah. Also observed along Canoe creek, north fork of Bear creek, and at Bluffton and Kendallville.

Spiraea salicifolia L. American Meadow-sweet. In swamps. Decorah. Also observed at Ft. Atkinson.

Rubus americanus (Pers.) Britt. (*R. triflorus* Rich.) Dwarf Raspberry. Swamps. (Fitzpatrick.)

Rubus strigosus Michx. Wild Red Raspberry. Rather common, on rocky banks. Decorah.

Rubus occidentalis L. Black Raspberry. On wooded banks and in thickets. Decorah.

Rubus nigrobaccus Bailey. (*R. villosus* Ait.) Blackberry. Common in thickets. Decorah.

Rubus procumbens Muhl. (*R. canadensis* L.) Dewberry. In sandy or rocky soil, not common. Decorah, Hesper. The specimens from the latter locality have an unusually large number of leaves having but one large leaflet. This form was reported by the writer under the name of *R. baileyanus*,* a species which, so far as known, does not occur in Iowa.

Drymocallis arguta (Pursh.) Ryd. (*Potentilla arguta* Pursh.) Tall Cinquefoil. On dry prairie and hills, locally common. Ft. Atkinson.

Dasiphora fruticosa (L.) Rydb. (*Potentilla fruticosa* L.) Shrubby Cinquefoil. Rare. Decorah (Arthur).

Sibbaldiopsis tridentata (Soland.) Rydb. (*Potentilla tridentata* Soland.) Three-toothed Cinquefoil. Very common on the St. Peter sandstone exposures northeast of Hesper.

Fragaria virginiana Duches. Wild Strawberry. In open places, locally common. (Fitzpatrick.)

Fragaria americana (Port.) Britt. (*F. vesca* L.) Wood Strawberry. Locally common, in rocky places. Decorah (Savage), Canoe creek, Ft. Atkinson.

Potentilla monspeliensis L. (*P. norvegica* L.) Rough Cinquefoil. Rather common, on banks and in thickets. Calmar.

Potentilla canadensis L. Five-finger. Common in dry soils. Moneek, Canoe creek, etc.

Geum virginianum L. Rough Avens. Moist woods. More common than the preceding at Hesper.

Geum macrophyllum Willd. Large-leaved Avens. In moist woods. (Fitzpatrick.)

Sieversia ciliata (Pursh.) Rydb. (*Geum triflorum* Pursh.) Reported by Fitzpatrick.

Agrimonia hirsuta (Muhl.) Bick. (*A. eupatoria* L.) Common in woods. Hesper, etc.

Rosa blanda Ait. Smooth Wild Rose. Not rare, on shaded banks, etc. Decorah.

* See Trans. Iowa Hort. Society, Vol. 38, p. 463;
Proc. Dav. Acad. of Sciences, Vol. X, 1904.

Rosa sayi Schwein. Prickly Rose. Common on banks and in thickets. Canoe creek, Bluffton, Calmar, Ft. Atkinson.

Rosa woodsii Lindl. Wood's Rose. Not common, in open places. Bluffton.

Rosa humilis Marsh. Pasture Rose. Reported by Fitzpatrick. A specimen collected by the writer at Calmar is probably this species.

Family 7. *Pomaceæ*.

Malus iowensis (Wood) Britt. (*Pyrus coronaria* L., in part.) Western Crab-apple. Common in thickets at all the stations named, excepting Calmar.

Aronia nigra (Willd.) Britt. (*Pyrus arbutifolia* var. *melanocarpa* Hook.) Black Choke-berry. Very rare. Found only upon an exposure of St. Peter sandstone near Hesper.

Amelanchier canadensis (L.) Medic. June-berry. Rather common, along river-bluffs, etc. Decorah (Goddard), Bluffton. Observed at Hesper, Canoe creek, south fork of Bear creek and Kendallville.

Amelanchier botryapium (L. f.) DC. (*A. canadensis* var. *oblongifolia* T. & G.) Shad-bush. Local, on shaded rocky banks. Decorah (Goddard), Bluffton.

Amelanchier rotundifolia (Michx.) Roem. (*A. canadensis* var. *rotundifolia* T. & G.) Round-leaved June-berry. On wooded banks and slopes. Rather common locally. Hesper, Bluffton.

Amelanchier alnifolia Nutt. Northwestern June-berry. Locally frequent on dry slopes. Decorah (Savage), Freeport. Also observed at Hesper.

Crataegus punctata Jacq. Large-fruited Thorn. Very common in thickets. Decorah, Bluffton, Canoe creek, north fork of Bear creek, Hesper, Ft. Atkinson. This is the most common red-haw in the county. Fitzpatrick also reports *C. crus-galli*, but one of his specimens in the University herbarium, so labelled, is certainly *C. punctata*. The writer's notes contain references to *C. crus-galli*, and the species probably occurs, but all the specimens which were collected are typical *C. punctata*.

Crataegus coccinea L. Scarlet Haw. What has usually been called *C. coccinea* is rather common in thickets. It is evidently

C. pruinosa K. Koch, as recognized by Sargent, and should probably be called by that name. Kendallville, N. fork of Bear creek.

Crataegus macracantha Lodd. Long-spined Thorn. Rather common in thickets. Decorah (Savage), Canoe creek, Moneek.

Crataegus tomentosa L. Pear Haw. Quite common in thickets. Canoe creek, north fork of Bear creek, Hesper.

Family 8. *Drupaceae*.

Prunus americana Marsh. Wild Plum. Common in thickets. Decorah, Ft. Atkinson. Also observed at all the stations excepting Calmar and Moneek.

Prunus pumila L. Dwarf Cherry. Very rare. Found only on an exposure of St. Peter sandstone near Hesper, with *Aronia*.

Prunus pennsylvanica L. f. Wild Red Cherry. Common along borders and in thickets. Hesper, Canoe creek. Also observed at Decorah, Bluffton and north fork of Bear creek.

Prunus virginiana L. Choke Cherry. Locally common, on rocky banks, etc. Decorah. Also observed at Hesper, Canoe creek, both forks of Bear creek, Bluffton and Kendallville.

Prunus serotina Ehrh. Wild Black Cherry. Common in upland woods. Hesper, Canoe creek. Also observed at all the other stations, excepting Calmar.

Family 9. *Casalpiniaceae*

Cassia chamaecrista L. Partridge Pea. A common weed, in dry soils. Decorah. etc.

Family 10. *Papilionaceae*.

Baptisia bracteata Ell. (*B. leucophaea* Nutt.) Large-bracted Wild Indigo. Open places. (Fitzpatrick.)

Baptisia leucantha T. & G. Wild Indigo. Locally common on rich prairies. Calmar.

Lupinus perennis L. Wild Lupine. Collected by Holway at Decorah.

Melilotus alba Desv. White Sweet-clover. A common introduced weed. Calmar, etc.

Melilotus officinalis (L.) Lam. Yellow Sweet-clover. Introduced. Less common than the preceding. (Fitzpatrick.)

Trifolium arvense L. Stone Clover. Introduced. (Fitzpatrick.)

Trifolium pratense L. Red Clover. Everywhere escaped from cultivation. Calmar, Hesper, etc.

Trifolium hybridum L. Alsike Clover. Becoming quite common in waste places. Ft. Atkinson, etc.

Trifolium repens L. White Clover. Common everywhere. Calmar, etc.

Amorpha fruticosa L. False Indigo. Along streams, rather common. Decorah. Observed at Bluffton, etc.

Amorpha canescens Pursh. Lead-plant. Common on dry prairies and ridges. Hesper, Freeport, Calmar, Ft. Atkinson, Highlandville. Observed at Kendallville, etc.

Kuhnistera candida (Willd.) Kuntz. (*Petalostemon candidus* Michx.) White Prairie Clover. Local, on prairies and dry ridges. Calmar.

Kuhnistera purpurea (Vent.) MacM. (*Petalostemon violaceus* Michx.) Purple Prairie Clover. With preceding. Calmar.

Cracca virginiana L. (*Tephrosia virginiana* Pers.) Goat's Rue. Reported by Fitzpatrick.

Robinia pseudacacia L. Black Locust. Common, evidently introduced. Observed at Hesper, Bluffton, Kendallville, etc.

Astragalus carolinianus L. (*A. canadensis* L.) Milk Vetch. On open banks and slopes. Not rare. Calmar.

Meibomia pauciflora (Nutt.) Kuntze. (*Desmodium pauciflorum* DC.) Few-flowered Tick-trefoil. Rare. In deep woods near Hesper.

Meibomia grandiflora (Walt.) Kuntze. (*Desmodium acuminatum* DC.) Tick-trefoil. Common in deep woods. Decorah.

Meibomia longifolia (T. & G.) Vail. (*Desmodium* —not mentioned in Gray's Manual.) Long-leaved Tick-trefoil. In thickets, etc. Decorah (Goddard), Calmar.

Lespedeza capitata Michx. Tall Bush-clover. Common on dry prairies and ridges. Calmar, Ft. Atkinson, Freeport.

Lespedeza leptostachya Engelm. Prairie Clover. Reported from this county in Fitzpatrick's Manual.

Vicia cracca L. Cow Vetch. Reported by Fitzpatrick.

Vicia americana Muhl. American Vetch. Common in rather moist open grounds. Decorah (Savage), Calmar.

Vicia sativa L. Common Vetch. Introduced, in waste places. Calmar.

Vicia angustifolia Roth. Smaller Common Vetch. Introduced. Fitzpatrick reports one specimen.

Lathyrus venosus Muhl. Veiny Pea. In rich, rather moist, open places. Not frequent. Calmar.

Lathyrus ochroleucus Hook. Cream-colored Vetchling. On hillsides. Not common. Decorah (Goddard).

Falcata comosa (L.) Kuntze. (*Amphicarpaea monoica* Nutt.) Hog Pea-nut. Not rare, in woods. Ft. Atkinson.

Falcata pitcheri (T. & G.) Kuntze. (*Amphicarpaea pitcheri* T. & G.) Pitcher's Hog Pea-nut. More common than the preceding, and in similar places. Hesper; Decorah (Goddard).

Apios apios (L.) MacM. (*A. tuberosa* Moench.) Ground-nut. Not rare, in rather moist grounds. Calmar, Hesper.

Order 12. Geraniales.

Family 1. Geraniaceæ.

Geranium maculatum L. Wild Crane's-bill. In upland woods. Decorah (Savage).

Family 2. Oxalidaceæ.

Oxalis violacea L. Violet Wood-sorrel. Not rare, in sandy and rocky places. (Fitzpatrick.)

Oxalis stricta L. (*O. corniculata* var. *stricta* Sav.) A common weed, in open places. Calmar, etc.

Family 3. Linaceæ.

Linum usitatissimum L. Flax. Escaped from cultivation, chiefly along railway right-of-way. Ft. Atkinson, etc.

Linum sulcatum Riddell. Grooved Yellow Flax. Common, in dry places. Hesper, Ft. Atkinson.

Family 4. Rutaceæ.

Xanthoxylum americanum Mill. Prickly Ash. Common, in thickets and on rocky banks. Decorah (Savage), Highlandville. Also observed at Canoe creek, both forks of Bear creek, and Bluffton.

Family 5. Polygalaceæ.

Polygala verticillata L. Whorled Milkwort. In dry open places. Not common. Ft. Atkinson.

Polygala viridescens L. (*P. sanguinea* L.) Field Milkwort. Rather common, on prairies and in meadows. Hesper, Ft. Atkinson.

Polygala senega L. Seneca Snakeroot. On rocky slopes. Not common. Bluffton.

Family 6. *Euphorbiaceæ.*

Euphorbia maculata L. Milk Purslane. A common weed. Calmar.

Euphorbia nutans Lag. (*E. preslii* Guss.) Upright Spurge. A common weed. Decorah (Goddard), Ft. Atkinson.

Euphorbia corollata L. Flowering Spurge. Common in dry, open places. Calmar, etc.

Euphorbia commutata Engelm. Tinted Spurge. Reported from Decorah by Arthur.

Euphorbia cyparissias L. Cypress Spurge. Introduced, locally common. Decorah.

Order 18. *Sapindales.*

Family 1. *Anacardiaceæ.*

Rhus hirta (L.) Sudw. (*R. typhina* L.) Staghorn Sumach. Locally common, on rocky slopes. Decorah, Freeport.

Rhus glabra L. Smooth Sumach. Very common in thickets and along borders, chiefly in dry places. Decorah (Savage), Calmar. Observed at all the stations.

Rhus radicans L. (*R. toxicodendron* L.) Poison Ivy. Common along borders, and in low grounds. Both bushy and climbing forms are common—the former chiefly in dry places. Decorah. Also observed at Hesper, Bluffton, Kendallville, etc.

Family 2. *Celastraceæ.*

Euonymus atropurpureus Jacq. Burning Bush; Wahoo. In alluvial grounds, and on banks. Not rare. Decorah. Also observed at Bluffton.

Celastrus scandens L. Climbing Bittersweet. Rather common, in woods and along borders. Decorah. Also observed at Hesper, Canoe creek and at Bluffton.

Family 3. *Staphyleaceæ.*

Staphylea trifolia L. Bladder-nut. Not rare, on rocky banks. Decorah. Also observed at Hesper, Canoe creek and Bluffton.

Family 4. *Aceraceæ*.

Acer saccharinum L. (*A. dasycarpum* Ehrh.) Soft Maple. Common on alluvial grounds. Kendallville. Observed at Canoe creek, Decorah, Ft. Atkinson and Bluffton.

Acer saccharum Marsh. (*A. saccharinum* Wang.) Hard Maple. Very common in upland woods, and on bluffs. Decorah. Observed at all stations excepting Calmar and Moneek.

Acer negundo L. (*Negundo aceroides* Moench.) Box Elder. Common, especially in alluvial soils. Decorah (Savage), Calmar. Observed at all the stations.

Family 5. *Balsaminacæ*.

Impatiens biflora Walt. (*I. fulva* Nutt.) Spotted Touch-me-not. In moist grounds. Locally common. Ft. Atkinson, Hesper.

Impatiens aurea Muhl. (*I. pallida* Nutt.) Pale Touch-me-not. In moist places, but rather less common than the preceding. Decorah (Savage).

Order 14. *Rhamnales*.Family 1. *Rhamnaceæ*.

Ceanothus americanus L. New Jersey Tea. Common on dry prairies and ridges. Decorah, Calmar. Also observed at the north fork of Bear creek, Canoe creek, Bluffton and Kendallville.

Ceanothus ovatus pubescens T. & G. (The variety is not mentioned in Gray.) Downy Red-root. Rare. On dry prairie ridges at Decorah.

Family 2. *Vitacæ*.

Vitis vulpina L. (*V. riparia* Michx.) Common Wild Grape. Very common along streams and ascending slopes. Decorah (Savage), Calmar. Also observed at all the other stations.

Parthenocissus quinquefolia (L.) Planch. (*Ampelopsis quinquefolia* Michx.) Virginia Creeper. Very common in thickets and deep woods. Calmar. Observed at all the other stations.

Order 15. Malvales.

Family 1. *Tiliaceæ*.

Tilia americana L. Basswood. Common in rich woods, especially on lower slopes. Decorah. Observed at all the other stations excepting Calmar.

Family 2. *Malvaceæ*.

Malva rotundifolia L. Round-leaved Mallow; Monkey-cheese. A common introduced weed, in waste places. Decorah, etc.

Malva crispa L. Curled Mallow. An introduced weed. One specimen reported by Fitzpatrick.

Napaea dioica L. Glade Mallow. In moist grounds. Not common. (Fitzpatrick.)

Abutilon abutilon (L.) Rusby. (*A. avicennae* Gaertn.) Velvet-leaf. An introduced weed, common in waste places, etc. Decorah, etc.

Order 16. Parietales.

Family 1. *Hypericaceæ*.

Hypericum ascyron L. Great St. John's-wort. Locally common in rather moist, open places. Hesper, Decorah.

Hypericum sphaerocarpon Michx. (*H. cistifolium* Lam.) Round-fruited St. John's-wort. Not common, on rocky slopes. North fork of Bear creek.

Hypericum maculatum Walt. Spotted St. John's-wort. Common, in rather moist soil. Hesper, Ft. Atkinson.

Hypericum canadense L. Canadian St. John's-wort. On moist, sandy banks, etc. Not abundant. Ft Atkinson.

Family 2. *Cistaceæ*.

Helianthemum majus (L.) B. S. P. (*Lechea major* Michx.) Hoary Frostweed. Quite common, on dry ridges, etc. Hesper, Calmar, etc. This species was reported from the county by Fitzpatrick under the name *H. canadense* Mx.

Lechea stricta Leggett. (Not included in Gray's Manual.) Prairie Pinweed. Locally common on dry sandy or rocky ridges. Hesper, especially on the St. Peter sandstone exposures.

Family 3. *Violaceæ*.

Viola pedatifida Don. Prairie Violet. Locally still common on prairies. Calmar.

Viola pedata L. Bird's-foot Violet. On dry, sandy slopes and ridges. Not rare. Hesper, Ft. Atkinson.

Viola papilionacea Pursh. (*V. palmata* var. *cucullata* Gray.) Common Blue Violet. Common, usually in thickets or along borders, sometimes in open places. Decorah (Savage), etc.

Viola scabriuscula (T. & G.) Schwein. (*V. pubescens* var. *scabriuscula* T. & G.) Common Yellow Violet. Common in rich alluvial woods. Hesper, etc.

Viola canadensis L. Canada Violet. Locally common in rich woods, especially on lower banks and slopes. Hesper.

Order 17. Thymelales.

Family Thymelaeaceæ.

Dirca palustris L. Leatherwood. Rare and local. Canoe creek.

Order 18. Myrtales.

Family Onagraceæ.

Ludwigia polycarpa Short & Peter. Many-fruited Ludwigia. Locally common in wet grounds, often in water. Ft. Atkinson.

Chamaenerion angustifolium (L.) Scop. (*Epilobium angustifolium* L.) Great Willow-herb. Locally common in dry open places. Calmar, Moneek.

Epilobium coloratum Muhl. Purple-leaved Willow-herb. Common in swampy grounds. Ft. Atkinson.

Epilobium adenocaulon Haussk. Northern Willow-herb. In wet grounds. Rather common. Decorah.

Onagra biennis (L.) Scop. (*Enothera biennis* L.) Common Evening Primrose. In dry soils and waste places. Common, often a weed. Ft. Atkinson, Calmar, etc.

Melilotis serrulata (Nutt.) Walp. (*Enothera serrulata* Nutt.) In dry places. (Fitzpatrick.)

Gaura parviflora Dougl. Small-flowered Gaura. Not rare, in dry soils. Ft. Atkinson.

Circaea lutetiana L. Enchanter's Nightshade. Common in deep woods. Hesper, etc.

Circaea alpina L. Smaller Enchanter's Nightshade. In deep woods. Not common. Decorah (Goddard), Canoe creek.

Order 19. Umbellales

Family 1. Araliaceæ

Aralia racemosa L. American Spikenard. Not rare, in deep upland woods. Decorah.

Aralia nudicaulis L. Wild Sarsaparilla. Common on rocky, well-shaded banks. Decorah (Savage), etc.

Panax quinquefolium L. (*Aralia quinquefolia* D. & P.) Ginseng. Becoming rare. In deep rich woods. Hesper, Decorah.

Family 2. *Umbelliferae*.

Sanicula marylandica L. Sanicle. Common in rich woods. Decorah (Savage), Calmar, Hesper.

Eryngium aquaticum L. (*E. yuccaeifolium* Michx.) Button Snake-root. Not rare, on dry prairies, but also occurring in moist grounds. Calmar.

Washingtonia claytoni (Michx.) Britt. (*Osmorrhiza brevistylis* DC.) Woolly Sweet Cicely. Common in deep woods. Hesper, Decorah.

Conium maculatum L. Poison Hemlock. In waste places. Introduced. Decorah (Goddard).

Zizia aurea (L.) Koch. Golden Meadow Parsnip. In rather moist open places. Decorah (Savage), Calmar.

Cicuta maculata L. Water Hemlock. Not rare, in swamps. Calmar; Decorah (Goddard).

Deringa canadensis (L.) Kuntze. (*Cryptotaenia canadensis* DC.) Honewort. Very common in woods. Hesper, Decorah, etc.

Taenidia integerrima (L.) Drude. (*Pimpinella integerrima* B. & H.) Yellow Pimpernel. Common on rocky slopes. Decorah (Savage), etc.

Sium cicutaefolium Gmel. Water-parsonip. Common in swamps. Ft. Atkinson, Hesper.

Pastinaca sativa L. Wild Parsnip. A common weed in waste places. Introduced. Calmar, Decorah.

Heracleum lanatum Michx. Cow-parsonip. In rather moist soil. Not rare. Decorah (Goddard).

Family 3. *Cornaceae*.

Cornus circinata L'Her. Round-leaved Dogwood. Common on shaded rocky slopes. Decorah, Bluffton, Highlandville.

Cornus stolonifera Michx. Red-osier Dogwood. Common, in wet places. Decorah, Bluffton, Canoe creek, Hesper.

Cornus candidissima Marsh. (*C. paniculata* L'Her.) Panicle Dogwood. Common on shaded banks, etc. Ft. Atkinson, Decorah, Hesper.

Cornus alternifolium L. f. Alternate-leaved Dogwood. Common on wooded slopes and banks. Decorah, Canoe creek, north fork of Bear creek, Hesper.

Series II.

Order 1. Ericales.

Family 1. *Pyrolaceæ*.

Pyrola elliptica Nutt. Shin-leaf. Common in deep upland woods. Decorah (Savage), Ft. Atkinson, Canoe creek, Hesper.

Pyrola secunda L. One-sided Wintergreen. Rare, in deep woods. Hesper, Decorah (Holway).

Chimaphila umbellata (L.) Nutt. Pipsissewa. Rare, in upland woods. Hesper.

Family 2. *Monotropaceæ*.

Monotropa uniflora L. Indian Pipe. Very abundant in deep upland woods. Hesper, Canoe creek.

Hypopitys americana (DC.) Small. (*Monotropa hypopitys* L.) Pine-sap. Very abundant in deep upland woods at Hesper.

Order 2. Primulales.

Family 1. *Primulacæ*.

Steironema ciliatum (L.) Raf. Fringed Loosestrife. Common in wet prairies. Calmar.

Steironema quadriflorum (Sims.) Hitch. (*S. longifolium* Gray.) Prairie Loosestrife. In moist low places. Decorah (Goddard).

Dodecatheon meadia L. Shooting Star. On prairies and treeless ridges. Not rare. (Fitzpatrick.)

Order 3. Gentianales.

Family 1. *Oleaceæ*.

Fraxinus americana L. White Ash. Fitzpatrick reports this as frequent in rich woods, but the writer saw no specimens which could be so referred with certainty. Most of the specimens reported under this name from Iowa undoubtedly belong to the following species.

Fraxinus lanceolata Borck. (*F. viridis* Michx.f.) Green Ash. Common on alluvial grounds, but also extending into upland forests. Decorah, Kendallville. Observed in all the forest-covered parts of the county.

Frazinus nigra Marsh. (*F. sambucifolia* Lam.) Black Ash. Quite common in upland woods. North fork of Bear creek, Hesper.

Family 2. *Gentianaceæ*.

Gentiana crinita Froel. Fringed Gentian. Locally common in shaded boggy places. Bluffton, Fremont Twp., Canoe creek.

Gentiana quinquefolia occidentalis (A. Gray.) A. S. H. (*G. quinqueflora* var. *occidentalis* Gray.) Stiff Gentain; Western Ague-weed. Chiefly on dry, rocky slopes. North fork of Bear creek, Decorah, Kendallville.

Gentiana puberula Michx. Prairie Gentian. On dry prairies. (Fitzpatrick.)

Gentiana andrewsii Griseb. Closed Gentian. In moist woods. Not common. Hesper.

Gentiana flavida A. Gray. (*G. alba* Muhl.) Yellowish Gentian. Not common. In deep woods. Bluffton.

Family 3. *Apocynaceæ*.

Apocynum androsaemifolium L. Spreading Dogbane. In thickets, etc. Common. Calmar, Moneek.

Acopynum cannabinum L. Indian Hemp. On prairies and in open places. Not rare. Calmar.

Family 4. *Asclepiadaceæ*.

Asclepias tuberosa L. Pleurisy-root. On dry prairies and ridges. Common. Ft. Atkinson.

Asclepias incarnata L. Swamp Milkweed. Common in swamps and wet meadows. Decorah.

Asclepias syriaca L. (*A. cornuti* Dec.) Common Milkweed. In open and waste places. Common. Calmar.

Asclepias exaltata (L.) Muhl. (*A. phytolaccoides* Pursh.) Tall Milkweed. In thickets. (Fitzpatrick.)

Asclepias verticillata L. Whorled Milkweed. Common on dry prairies, etc. Ft. Atkinson.

Ipomoea pandurata (L.) Meyer. Wild Potato Vine. Dry soil. (Fitzpatrick.)

Order 4. Polemoniales.

Family 1. *Convolvulaceæ*.

Convolvulus sepium L. Hedge Bindweed. Common in fields and waste places. Decorah (Goddard), Calmar.

Convolvulus arvensis L. Small Bindweed. In fields and waste places. Introduced. Calmar.

Family 2. *Cuscutaceæ*.

Cuscuta cephalanthi Engelm. Dodder. On coarse herbs, etc. Common. Decorah.

Cuscuta gronovii Willd. (*C. gronovii* var. *latifolia* Engelm.) The variety *latifolia* was reported from Hesper by Arthur.

Cuscuta paradoxa Raf. (*C. glomerata* Chois.) Glomerate Dodder. Reported by Fitzpatrick.

Family 3. *Polemoniaceæ*.

Phlox pilosa L. Prairie Phlox. Common on prairies, and open ridges. Decorah, Ft. Atkinson.

Phlox divaricata L. Wild Blue Phlox. Common in alluvial woods. Decorah (Savage).

Polemonium reptans L. Jacob's Ladder. Common, in woods. Decorah, Hesper.

Family 4. *Hydrophyllaceæ*.

Hydrophyllum virginicum L. Virginia Water-leaf. Common, in rich woods. Decorah (Savage).

Hydrophyllum appendiculatum Michx. Appendaged Water-leaf. In rich woods. (Fitzpatrick.)

Macrocalyx nyctelea (L.) Kuntze. (*Ellisia nyctelea* L.) Nyctelea. Common in moist, shaded places. Becoming a weed. Decorah (Savage), etc.

Family 5. *Boraginaceæ*.

Lappula lappula (L.) Karst. (*Echinosperrum lappula* Lehm.) Burseed. Introduced. In waste places. Decorah.

Lappula texana (Scheele) Britt. (*Echinosperrum redowskii* var. *occidentale* Wats.) On dry ridges and slopes. Common. Decorah (Arthur), Highlandville.

Lappula virginiana (L.) Greene. (*Echinosperrum virginicum* Lehm.) Beggar's Lice. Along borders, in open woods, etc. (Fitzpatrick.)

Mertensia virginica (L.) DC. Smooth Lungwort; Smooth Blue-bell. In alluvial woods. (Fitzpatrick.)

Mertensia paniculata (Ait.) G. Don. Tall Lungwort. In woods. Decorah (Goddard; Arthur).

Lithospermum latifolium Michx. American Gromwell. In dry thickets, etc. (Fitzpatrick.)

Lithospermum gmelini (Michx.) A. S. H. (*L. hirtum* Lehm.) Hairy Puccoon. In dry, usually open places. Decorah (Savage).

Lithospermum canescens (Michx.) Lehm. Hoary Puccoon. In dry places. Decorah (Savage).

Lithospermum linearifolium Goldie. (*L. angustifolium* Michx.) Narrow-leaved Puccoon. In dry soil. (Fitzpatrick.)

Onosmodium molle Michx. (*O. carolinianum* var. *molle* Gray.) Soft-hairy False Gromwell. On dry prairie. (Fitzpatrick.)

Family 6. *Verbenaceæ*.

Verbena urticifolia L. White Vervain. Common introduced weed. (Fitzpatrick), etc.

Verbena hastata L. Blue Vervain. Common in moist places. Calmar, Hesper, etc.

Verbena stricta Vent. Hoary Vervain. Common on dry prairie, etc. Ft. Atkinson, etc.

Verbena bracteosa Michx. Large-bracted Vervain. In dry and waste places. Calmar, etc.

Family 7. *Labiataæ*.

Teucrium canadense L. Wood Sage. In moist grounds. Decorah.

Isanthus brachiatus (L.) B. S. P. (*I. caeruleus* Michx.) False Pennyroyal. On sandy or rocky slopes, etc. Decorah (Holway).

Scutellaria lateriflora L. Mad-dog Skull-cap. In low places. Not rare. Decorah.

Scutellaria cordifolia Muhl. (*S. versicolor* Nutt.) On wooded banks. (Fitzpatrick.)

Scutellaria parvula Michx. Small Skull-cap. On sandy and rocky slopes. Hesper.

Agastache nepetoides (L.) Kuntze. (*Lophanthus nepetoides* Benth.) Catnip. Giant-Hyssop. Along borders and in thickets, not common. Hesper.

Agastache scrophulariaefolia (Willd.) Kuntze. (*Lophanthus scrophulariaefolius* Benth.) Giant Hyssop. In thickets and woods. Common. Hesper.

Nepeta cataria L. Catnip. In waste places. Introduced. Common. Calmar, Hesper.

Glechoma hederacea L. (*Nepeta glechoma* Benth.) Ground Ivy. A common introduced weed. Decorah (Savage), etc.

Prunella vulgaris L. (*Brunella vulgaris* L.) Heal-all Moist woods, waste places, etc. Native, or thoroughly naturalized. Calmar, Canoe creek.

Physostegia virginiana (L.) Benth. False Dragon-head. On alluvial banks, etc. (Fitzpatrick.)

Physostegia parviflora Nutt. (Not given in Gray.) In moist places. Not abundant. Ft. Atkinson.

Galeopsis tetrahit L. Hemp-nettle. Not rare. Calmar, Canoe creek.

Leonurus cardiaca L. Motherwort. Introduced weed, in waste places. Decorah (Savage), Canoe creek.

Stachys palustris L. Hedge Nettle. Wet places. Especially common on borders of prairie ponds or swamps.

Stachys aspera Michx. Rough Hedge-nettle. In wet places. (Fitzpatrick.)

Monarda scabra Bick. (*M. fistulosa* var. *mollis* Benth.) Pale Wild Bergamot. Prairies and borders. Common. Calmar.

Blephilia hirsuta (Pursh) Torr. In woods. (Fitzpatrick.)

Hedeoma hispida Pursh. Rough Pennyroyal. Dry grounds. (Fitzpatrick.)

Koellia flaxuosa (Walt.) MacM. (*Pycnanthemum linifolium* Pursh.) Narrow Leaved Mountain-mint. In thickets, along borders, etc. Hesper, Calmar.

Koellia virginiana (L.) MacM. (*Pycnanthemum lanceolatum* Pursh.) Dry borders and thickets. (Fitzpatrick.)

Lycopus virginicus L. Purple Bugle-weed. In wet places. Not rare. Hesper.

Lycopus americanus Muhl. (*L. sinuatus* Ell.) Water Hoarhound. In swamps and bogs. Common. Calmar, Hesper.

Mentha canadensis L. American Wild Mint. Common in wet places. Ft. Atkinson, Hesper.

Family 8. *Solanaceae*

Physalis philadelphica Lam. Ground-cherry. In rich soil. (Fitzpatrick.)

Physalis lanceolata Michx. Prairie Ground-cherry. Dry places. (Fitzpatrick.)

Physalis virginiana Mill. Virginia Ground-cherry. In open places, fields, etc. Common. Ft. Atkinson.

Family 9. *Scrophulariaceae*

Verbascum thapsus L. Mullein. Common introduced weed, in waste places. Decorah, etc.

Linaria linaria (L.) Karst. (*L. vulgaris* Mill.) Butter-and-eggs. Introduced, in waste places. Calmar.

Scrophularia marylandica L. (*S. nodosa* var. *marylandica* Gray, in part.) Maryland Figwort. In woods and thickets. Common. Decorah, etc.

Scrophularia leporella Bick. (*S. nodosa* var. *marylandica* Gray, in part.) Along borders and on prairies. Common. Decorah (Savage), Calmar, etc.

Chelone glabra L. Snake-head. In bogs near Hesper. Local.

Mimulus ringens L. Monkey-flower. Borders of streams, etc. Common. Decorah, etc.

Mimulus jamesii T. & G. Moist grounds. (Fitzpatrick.)

Gratiola virginiana L. Clammy Hedge-hyssop. In upland woods, according to Fitzpatrick.

Veronica anagallis-aquatica L. (*V. anagallis*.) Water Speedwell. Edges of streams and ponds. Not rare. Decorah.

Veronica peregrina L. Purslane Speedwell. A common weed, in fields, etc. Decorah (Goddard; Savage).

Veronica arvensis L. Corn Speedwell. An introduced weed. Hesper (Arthur).

Leptandra virginica (L.) Nutt. (*Veronica virginica* L.) Culver's Root. Moist prairies, thickets and borders. Locally common. Calmar.

Gerardia aspera Dougl. Rough Purple Gerardia. Rare, on dry ridges near Highlandville.

Gerardia purpurea L. Large Purple Gerardia. In moist places. Quite common. Ft. Atkinson.

Gerardia tenuifolia Vahl. Slender Gerardia. In dry woods. (Fitzpatrick.)

Castilleja coccinea (L.) Spreng. Painted-cup; Indian-pink. In open thickets, etc. (Fitzpatrick.)

Pedicularis lanceolata Michx. Swamp Lousewort. Locally common, in swamps. Decorah, Ft. Atkinson.

Pedicularis canadensis L. Common Lousewort. Dry ridges and prairies. Common. Hesper, Calmar.

Family 10. *Lentibula saccæ.*

Utricularia vulgaris L. Greater Bladderwort. In ponds. Local. Ft. Atkinson.

Family 11. *Phrymaceæ.*

Phryma leptostachya L. Lopseed. Common in upland woods, and in thickets. Hesper, Calmar.

Order 6. *Plantaginales.*

Family 1. *Plantaginaceæ.*

Mitchella repens L. Partridge-berry. Rare, in deep upland woods. Hesper.

Galium aparine L. Cleavers. Common, chiefly in moist places. Decorah (Goddard; Savage), etc.

Galium boreale L. Northern Bedstraw. Common on rocky slopes. Decorah, Calmar.

Galium concinnum T. & G. Shining Bedstraw. Not rare, in upland dry woods. Decorah.

Galium asprellum Michx. Rough Bedstraw. Common in moist places. Calmar, Canoe creek, Hesper.

Family 2. *Caprifoliaceæ.*

Sambucus canadensis L. American Elder. Common in alluvial soils. Observed at Decorah, Canoe creek, Bluffton, Kendallville and Hesper.

Sambucus pubens Michx. (*S. racemosa* L.) Red-berried Elder. Not common, on rocky banks. Decorah, Bluffton.

Viburnum opulus L. Cranberry-tree. Not common, on rocky slopes. Hesper, Decorah.

Viburnum pubescens (Ait.) Pursh. Downy-leaved Arrow-wood. On rocky slopes. Not common. Canoe creek.

Viburnum dentatum L. Arrow-wood. On moist banks. Not common. The specimens referred to this species may be a form of the preceding. Decorah.

Viburnum lentago L. Sheep-berry; Black Haw. Common in alluvial soils and on lower slopes. Decorah (Savage), Canoe creek, Kendallville.

Triosteum perfoliatum L. Horse-Gentian. Reported by Fitzpatrick. Possibly an error. The writer was able to find only the following species.

Triosteum aurantiacum Bicknell. (*T. perfoliatum*, in part.) Red-fruited Horse-Gentian. Common in upland woods. Decorah, Bluffton, Ft. Atkinson.

Linnæa americana Forbes. (*L. borealis* L.) Twin-flower. In upland woods, not common. Decorah.

Symphoricarpos racemosus Michx. Snowberry. Not common. On rocky slopes. Kendallville.

Symphoricarpos occidentalis Hook. Wolfberry. Locally common in dry places. Ft. Atkinson, Hesper.

Lonicera dioica L. (*L. glauca* Hill.) Glauous Honeysuckle. Common, on rocky slopes and banks. Decorah, Bluffton, Highlandville.

Lonicera sullivantii A. Gray. Sullivant's Honeysuckle. On wooded slopes and along borders. Not rare. Decorah, north fork of Bear creek.

Lonicera tatarica L. Tartarian Bush Honeysuckle. On rocky wooded slopes. Decorah (Fitzpatrick).

Family 3. *Adoxaceæ*.

Adoxa moschatellina L. Musk-root. Rocky woods. Rare. (Fitzpatrick.)

Order 8 Valerianales.

Family 1. *Cucurbitaceæ*.

Micrampelis lobata (Michx.) Greene. (*Echinocystis lobata* T. & G.) Wild Balsam Apple. Chiefly in low woods. Common. Decorah, Ft. Atkinson.

Family 2. *Companulaceæ*.

Campanula rotundifolia L. Arctic Harebell. Locally common on rocks and rocky slopes. Decorah.

Campanula aparinoides Pursh. Marsh Bellflower. In grassy swamps. Not common. Hesper.

Campanula americana L. Tall Bellflower. On moist wooded banks and slopes. Common. Hesper, Canoe creek, etc.

Specularia perfoliata (L.) A. DC. Venus' Looking Glass. On dry slopes, etc. (Fitzpatrick.)

Lobelia spicata Lam. Pale Spiked Lobelia. In dry open places. (Fitzpatrick.)

Lobelia leptostachys A. DC. Spiked Lobelia. In dry prairie. Not common. Calmar.

Lobelia inflata L. Indian Tobacco. Common in dry and waste places. Decorah (Goddard), Highlandville, Ft. Atkinson.

Family 3. *Cichoriaceæ*.

Cichorium intybus L. Chicory. A roadside weed, locally common. Decorah.

Adopogon virginicum (L.) Kuntze. (*Krigia amplexicaulis* Nutt.) Cynthia. Common in upland woods. Hesper, Decorah.

Taraxacum taraxacum (L.) Karst. (*T. officinale* Web.) Dandelion. A common introduced weed. Calmar, etc.

Sonchus asper (L.) All. Spiny Sow-thistle. A common introduced weed. Decorah, Hesper, etc.

Lactuca scariola L. Prickly Lettuce. An introduced weed, spreading rapidly. Calmar, Hesper.

Lactuca canadensis L. Wild Lettuce. On moist prairies, etc. Common. Calmar.

Hieracium canadense Michx. Canada Hawkweed. Common in dry woods, etc. Bluffton, Canoe creek.

Heiracium scabrum Michx. Rough Hawkweed. On rather open wooded slopes. Hesper, Ft. Atkinson.

Nabalus albus (L.) Hook. (*Prenanthes alba* L.) Rattlesnake-root. Common in rocky woods. Decorah, Hesper.

Nabalus racemosus (Michx.) DC. (*Prenanthes racemosa* Michx.) Glaucous White Lettuce. On moist prairies. Ft. Atkinson, Orleans Twp.

Family 4. *Ambrosiaceæ*.

Iva xanthiifolia (Fresen.) Nutt. Burweed; Marsh Elder. In moist prairie soils, becoming a common weed. Decorah, Ft. Atkinson.

Ambrosia trifida L. Great Ragweed. A common weed in low places, along roadsides, etc. Decorah, Hesper, Calmar, Ft. Atkinson.

Ambrosia trifida integrifolia (Muhl.) T. & G. Entire-leaved Ragweed. This variety is found in dry places. Decorah.

Ambrosia artemisiaefolia L. Ragweed. A common weed, along roads, in fields, etc. Hesper, Calmar etc.

Xanthium echinatum Murr. (*X. canadense* Mill., in part.) Cocklebur. In sandy soil. A common weed. Decorah.

Family 5. *Compositæ*.

Veronia fasciculata Michx. Western Iron-weed. A common weed in alluvial pastures, etc. Ft. Atkinson, etc.

Eupatorium maculatum L. (*E. purpureum* L., in part.) Spotted Joe-pye Weed. In moist places, rather common locally. Ft. Atkinson.

Eupatorium rydbergii Britt. (*E. purpureum* L., in part.) Rydberg's Joe-pye Weed. In moist soils. Not rare at Hesper.

Eupatorium altissimum L. Tall Boneset. In bogs, etc. Quite common. Ft. Atkinson.

Eupatorium ageratoides L. f. White Sanicle. In rich woods, common. Decorah, Highlandville.

Kuhnia glutinosa Ell. (*K. eupatorioides* var. *corymbulosa* T. & G.) Prairie False Boneset. In dry open places. Ft. Atkinson.

Lacinaria cylindracea (Michx.) Kuntze. (*Liatris cylindracea* Michx. and *Liatris graminifolia* Willd.) Cylindric Blazing Star. Rare, on dry prairies and ridges. Hesper, Highlandville.

Lacinaria pycnostachya (Michx.) Kuntze. (*Liatris pycnostachya* Michx.) Prairie Blazing Star. Common on moist prairies and in meadows. Ft. Atkinson.

Lacinaria scariosa (L.) Hill. (*Liatris scariosa* Willd.) Large Blazing Star. Common on drier prairies. Hesper, Ft. Atkinson, Calmar.

Solidago flericaulis L. (*S. latifolia* L.) Zigzag Goldenrod. Common in rich woods. Decorah, Canoe creek, north fork of Bear creek, Hesper.

Solidago hispida Muhl. (*S. bicolor* var. *concolor* T. & G.) Hairy Goldenrod. In dry places. Hesper.

Solidago uliginosa Nutt. Bog Goldenrod. In bogs, not common. Kendallville.

Solidago speciosa Nutt. Showy Goldenrod. Common in upland woods, etc. Bluffton.

Solidago rigidiuscula (T. & G.) Porter. (*S. speciosa* var. *angustata* T. & G.) In dry open places. Not common. Decorah.

Solidago ulmifolia Muhl. Elm-leaved Goldenrod. Common in deep woods and thickets. Hesper, Decorah, Ft. Atkinson.

Solidago serotina Ait. Late Goldenrod. In moist grounds, common. Canoe creek, etc.

Solidago serotina gigantea (Ait.) A. Gray. Giant Goldenrod. In moist grounds. Not rare. Hesper, Decorah.

Solidago missouriensis Nutt. Missouri Goldenrod. Common on dry prairies. Hesper, Calmar, Ft. Atkinson.

Solidago canadensis L. Canada Goldenrod. In rather dry places, not rare. Canoe creek.

Solidago nemoralis Ait. Field Goldenrod. Common in dry places. Hesper, Decorah, Ft. Atkinson.

Solidago rigida L. Stiff Goldenrod. Common on dry prairies and ridges. Hesper, Moneek, Canoe creek, Decorah, Ft. Atkinson.

Euthamia graminifolia (L.) Nutt. (*Solidago lanceolata* L.) Bushy Goldenrod. In moist open places. Not rare. Moneek, Ft. Atkinson.

Euthamia caroliniana (L.) Greene. (*Solidago tenuifolia* Pursh.) Slender Fragrant Goldenrod. On dry prairies, etc. Hesper.

Aster azureus Lindl. Sky-blue Aster. On prairies, etc. (Fitzpatrick.)

Aster shortii Hook. Short's Aster. Borders of woods, etc. Not common. Decorah.

Aster drummondii Lindl. Drummond's Aster. In dry woods and thickets. Common. Decorah, Hesper.

Aster sagittifolius Willd. Arrow-leaved Aster. In dry woods, etc. Not common. Ft. Atkinson.

Aster novae-angliae L. New England Aster. Common on prairies, etc. Ft. Atkinson, Canoe creek. The form with rose-red flowers was also found at Canoe creek.

Aster puniceus L. Purple-stem Aster. Common in bogs. Decorah (Goddard), Hesper, Bluffton. Some of the Hesper specimens approach *var. lucidulus* A. Gray. The Bluffton specimens are almost smooth.

Aster prenanthoides Muhl. Crooked-stem Aster. Common along moist borders, etc. Decorah, Canoe creek.

Aster laevis L. Smooth Aster. Common on dry prairies, etc. Calmar, Decorah, Hesper.

Aster sericeus Vent. Silky Aster. On dry banks and slopes. Local. Sattre, Highlandville.

Aster ptarmicoides (Nees) T. & G. Upland White Aster. Rare, on rocky ridges. Highlandville.

Aster salicifolius Lam. Willow Aster. In moist open places. Common. Decorah (Goddard), Moneek, Ft. Atkinson.

Aster paniculatus Lam. Panicked Aster. In moist places. Canoe creek. Not rare.

Aster tradescanti L. Michaelmas Daisy. In moist and open places. Not rare. Hesper.

Aster lateriflorus (L.) Britt. (*A. diffusus* Ait.) Starved Aster. In open places, along borders, etc. Decorah.

Aster exiguus (Fernald) Ryd. (*A. multiflorus* Ait., in part.) Ciliate-leaved Aster. Common on dry prairies, etc. Decorah.

Erigeron pulchellus Michx. (*E. bellidifolius* Muhl.) Robin's Plantain. On dry slopes etc. (Fitzpatrick.)

Erigeron philadelphicus L. Philadelphia Fleabane. Common in woods and along borders. Ft. Atkinson.

Erigeron annuus (L.) Pers. Daisy Fleabane. In fields and open places. Common. Decorah, Hesper, Calmar, Ft. Atkinson.

Erigeron ramosus (Walt.) B. S. P. (*E. strigosus* Muhl.) Daisy Fleabane. Very common in meadows and fields. A troublesome weed. (Fitzpatrick), etc.

Leptilon canadense. (L.) Britt. (*Erigeron canadensis* L.) Horse-weed. A very common weed in waste places and fields. Hesper, Calmar, Ft. Atkinson, etc.

Doellingeria umbellata (Mill.) Ness. (*Aster umbellatus* Mill.) Tall Flat-top White Aster. In moist prairie. Local. Orleans Twp.

Doellingeria humilis (Willd.) Britt. (*Aster umbellatus* var. *latifolius* Gray.) Broad-leaved Flat-top White Aster. In moist places, Hesper.

Antennaria plantaginifolia (L.) Rich. Plantain-leaf Everlasting. Common on dry ridges, etc. Decorah (Savage), etc.

Gnaphalium obtusifolium L. (*G. polycephalum* Michx.) White Balsam. In dry open places. Common. Hesper, Sattre, north fork of Bear creek.

Inula helenium L. Elecampane. Introduced. Not common, along roadsides. Canoe creek.

Polymnia uvedalia L. Yellow Leaf-cup. In rich soil. Not common. Calmar.

Polymnia canadensis L. Small-flowered Leaf-cup. Common on shaded rocky slopes at Decorah.

Silphium perfoliatum L. Cup-plant. Common in wet places. Ft. Atkinson.

Silphium laciniatum L. Compass-plant. Still common on prairies. Hesper, Calmar.

Parthenium integrifolium L. American Fever-few. In dry places. Not rare. Calmar.

Heliopsis scabra Dunal. Rough Ox-eye. Common on dry prairies, etc. Decorah, Calmar.

Rudbeckia triloba L. Thin-leaved Cone-flower. In thickets, etc. (Fitzpatrick.)

Rudbeckia hirta L. Black-eyed Susan. Common in rather dry open grounds. Calmar.

Rudbeckia laciniata L. Tall Cone-flower. Common on moist pastures, etc. Calmar.

Ratibida pinnata (Vent) Bernh. (*Lepachys pinnata* T. & G.) Gray-headed Cone-flower. Common on dry prairies. Calmar, etc.

Helianthus annuus L. Common Sunflower. Introduced, in waste places. Ft. Atkinson. etc.

Helianthus scaberrimus Ell. (*H. rigidus* Desf.) Stiff Sunflower. On dry prairies and ridges. Common. Calmar, Ft. Atkinson, etc.

Helianthus occidentalis Ryd. Few-leaved Sunflower. In dry open places. Common. Decorah (Goddard), Calmar, Ft. Atkinson.

Helianthus grosse-serratus Martens. Saw-tooth Sunflower. In moist open places. Common. Bluffton, Calmar.

Helianthus decapetalus L. Wild Sunflower. In moist shaded places. Not common. Decorah.

Helianthus strumosus macrophyllus (Willd.) Britt. (*H. strumosus* var. *mollis* T. & G.) Wood Sunflower. Common in open woods, etc. Decorah, Hesper, Ft. Atkinson.

Coreopsis palmata Nutt. Stiff Tickseed. On dry prairies and ridges. Common. Calmar, etc.

Bidens cernua L. Nodding Bur-marigold. Common in wet places. Ft. Atkinson, etc.

Bidens connata Muhl. Swamp Beggar-ticks. Reported by Fitzpatrick.

Bidens frondosa L. Spanish Needles. In moist soil, waste places, etc. Common. Decorah, Calmar.

Helenium autumnale L. Sneeze-weed. In moist places. A common weed in low pastures. Decorah, Hesper, Ft. Atkinson.

Achillea millefolium L. Yarrow. In dry open places. A common weed. Calmar, etc.

Anthemis cotula L. Mayweed; Dog-fennel. A common introduced weed. Decorah, Calmar, etc.

Chrysanthemum leucanthemum L. Ox-eye Daisy. An introduced weed, not yet abundant. Calmar.

Tanacetum vulgare L. Tansy. Escaped from gardens. Hesper, Highlandville.

Artemisia caudata Michx. Tall Wormwood. In dry open places. Quite common. Decorah, Ft. Atkinson.

Artemisia dracunculoides Pursh. Linear-leaved Wormwood. On dry ridges. Not common. Highlandville.

Artemisia biennis Willd. Biennial Wormwood. Moist banks. (Fitzpatrick.)

Artemisia serrata Nutt. Saw-leaf Mugwort. On prairies. Quite common. Calmar, Hesper.

Artemisia gnaphalodes Nutt. (*A. ludoviciana* Nutt., in part.) In dry soils. (Fitzpatrick.)

Erechtites hieracifolia (L.) Raf. Fire-weed. Common in waste places and clearings. Hesper, north fork of Bear creek.

Mesadenia reniformis (Muhl.) Raf. (*Cacalia reniformis* Muhl.) Great Indian Plantain. Quite common, in woods. Decorah, Bluffton, Canoe creek.

Mesadenia tuberosa (Nutt.) Britt. (*Cacalia tuberosa* Nutt.) Tuberous Indian Plantain. In moist places. Not common. Ft. Atkinson.

Mesadenia atriplicifolia (L.) Raf. (*Cacalia atriplicifolia* L.) Pale Indian Plantain. In rich soil. Rare. Calmar.

Synosma suaveolens (L.) Raf. (*Cacalia suaveolens* L.) In rich woods. Rare. Ft. Atkinson.

Senecio aureus L. Swamp Squaw-weed. In bogs. Not rare. Hesper.

Senecio balsamitae Muhl. (*S. aureus* var. *balsamitae* T. & G.) Balsam Groundsel. In dry places. Bluffton, etc.

Arctium lappa L. Great Burdock. Introduced weed. Calmar.

Arctium minus Schk. (*A. lappa* var. *minus* Gray.) Common Burdock. Common introduced weed. Decorah, etc.

Carduus lanceolatus L. (*Cnicus lanceolatus* Hoffm.) Common Field Thistle. Introduced weed. Common. Ft. Atkinson, etc.

Carduus altissimus L. (*Cnicus altissimus* Willd.) Tall Thistle. Common in thickets, etc. Canoe creek, Kendallville.

Carduus discolor (Muhl.) Nutt. (*Cnicus altissimus* var. *discolor* Gray.) Field Thistle. Common along borders, etc. Decorah, Ft. Atkinson.

Carduus iowensis Pammel. (*Cnicus altissimus* Willd., in part.) Iowa Thistle. Along borders and in thickets. Not common. Hesper.

Carduus hilli (Canby) Porter. (Not given in Gray.) Hill's Thistle. On rich prairies. Not common. Calmar.

Carduus muticus (Michx.) Pers. (*Cnicus muticus* Pursh.) Swamp Thistle. Common in bogs near Hesper.

Carduus arvensis (L.) Robs. (*Cnicus arvensis* Hoffm.) An introduced weed. Fortunately not common. Ft. Atkinson.



- Abies balsamea*, 154, 161, 165.
Abutilon abutilon, 160, 194.
 avicennae, 194.
Acalypha, 160.
Acer dasycarpum, 193.
 negundo, 153, 193.
 saccharinum, 153, 193.
 saccharum, 154, 193.
Achillea millefolium, 210.
Acorus calamus, 162, 171.
Acroanthus unifolia, 174.
Actaea alba, 182.
 rubra, 182.
 spicata, 182.
Adder's tongue, 172, 174.
Adiantum pedatum, 157, 164.
Adicea pumila, 178.
Adopogon virginicum, 205.
Adora moschatellina, 204.
Agastache nepetoides, 201.
 scrophulariaefolia, 201.
Agrimonia eupatoria, 187.
 hirsuta, 187.
Agropyron caninum, 163.
 occidentale, 159, 168.
 repens, 163.
 tenerum, 159, 168.
Agropyrum, 168.
Agrostemma githago, 181.
Agrostis alba, 159, 166.
Alder, hoary, 154.
Alisma plantago-aquatica, 170.
Allionia nyctaginea, 180.
Allium cernuum, 158, 171.
 stellatum, 172.
 triccoccum, 171.
Alnus incana, 154, 176.
Alopecurus geniculatus, 166.
Alsine longifolia, 181.
 media, 159, 181.
Alum-root, 186.
Alyssum, hoary, 185.
Amaranthus blitoides, 159, 180.
 retroflexus, 159, 180.
Amlrosia artemisiaefolia, 206.
 trifida, 206.
 trifida integrifolia, 206.
Amelanchier alnifolia, 154, 188.
 botryapium, 153, 188.
 canadensis, 154, 188.
 rotundifolia, 153, 188.
Amorpha canescens, 154, 190.
 fruticosa, 153, 190.
Ampelopsis quinquefolia, 193.
Amphicarpaea monoica, 191.
 pitcheri, 191.
Andropogon furcatus, 165.
 nutans, 159, 165.
 provincialis, 159, 165.
Anemone, 182.
 canadensis, 182.
 cylindrica, 182.
 nemorosa, 182.
 patens, 183.
 pennsylvanica, 182.
 quinquefolia, 182.
 virginiana, 182.
Anemone patens, 183.
 thalictroides, 182.
Annotated list of plants, 162.
Antennaria plantaginifolia, 209.
Anthemis cotula, 159, 210.
Apios apios, 191.
 tuberosa, 191.
Aplectrum hyemale, 174.
Apocynum androsaemifolium, 198.
 cannabinum, 162, 198.
Aquilegia canadensis, 158, 182.
Arabis bracycarpa, 185.
 canadensis, 185.
 confinis, 185.
 dentata, 185.
 laevigata, 185.
 lyrata, 185.
Aralia nudicaulis, 195.
 quinquefolia, 196.
 racemosa, 195.
Arbor-vitæ, 155.
Arctium lappa, 159, 211.
 minus, 211.
Arenaria lateriflora, 181.
Arisaema dracontium, 171.
 triphylum, 170.
Aristida basiramea, 166.
Aronia nigra, 188.
Arrowhead, 170.
Arrow wood, 154, 203, 204.
Artemisia artemisiaefolia, 160.
 biennis, 210.
 caudata, 210.
 dracunculoides, 210.
 gnaphalodes, 211.
 ludoviciana, 211.
 serrata, 210.
 trifida, 160.
Asarum acuminatum, 178.
 canadense, 178.
 reflexum, 178.
Asclepias cornuta, 198.
 exaltata, 198.
 incarnata, 198.
 phytolaccoides, 198.
 syriaca, 160, 198.
 tuberosa, 162, 198.
 verticillata, 198.
Ash, prickly, 191.
Ashes, 153, 154, 156, 197, 198.
Asparagus, 172.
Asparagus officinalis, 172.
Aspen, 154, 174.

- Aspidum goldianum*, 164.
thelypteris, 164.
Asplenium filix-foemina, 164.
 Asters, 157, 158, 207, 208, 209.
Aster azureus, 207.
 cordifolius, 158.
 diffusus, 208.
 drummondii, 207.
 exiguus, 157, 208.
 laevis, 157, 208.
 lateriflorus, 208.
 lucidulus, 208.
 multiflorus, 208.
 novae-angliae, 157, 208.
 paniculatus, 208.
 prenanthoides, 208.
 ptarmicoides, 208.
 punctatus, 208.
 sagittifolius, 207.
 salicifolius, 208.
 sericeus, 208.
 shortii, 157, 207.
 tridescantii, 208.
 umbellatus, 209.
Astragalus canadensis, 190.
 carolinianus, 190.
Athyrium filix-foemina, 157, 164.
Atragene americana, 153, 155, 183.
 Avena, rough, 187.
 Awn-grass, tufted triple, 166.
 Balm of Gilead, 154, 155, 174.
 Balsam, 154, 161, 165, 209.
 white, 204.
 Balsam apple, 204.
 Baneberry, 182.
Baptisia bracteata, 189.
 leucantha, 189.
 leucophaea, 189.
 Bartsch, Paul, cited, 149.
 Basswood, 154, 155, 194.
Batrachium trichophyllum, 156, 183.
 Beard-tongue, foxglove, 154.
 Bedstraw, 203.
 Beech, blue, 154, 176.
 Beggar's lice, 160, 199.
 Beggar-ticks, 210.
 Bellflower, 205.
 Bellwort, 157, 171.
 Bergamot, wild, 201.
Berteroa incana, 185.
 Betula, oil of, 161.
Betula lenta, 154, 162.
 nigra, 153.
 papyrifera, 154, 176.
Bicuculla bicucullaria, 184.
 canadensis, 158, 184.
Bidens, 160.
 cernua, 210.
 connata, 210.
 frondosa, 210.
 Bindweed, 159, 189.
 Birch, 153, 154, 155, 176.
 Bishop's cap, 158, 186.
 Bittersweet, 153, 155, 176, 192.
 Blackberry, 154, 187.
 Black-eyed Susan, 209.
 Bladder nut, 154, 155, 192.
 Bladderwort, 203.
 Blazing-star, 157, 206.
Blephariglossis leucophaea, 157, 173.
Blephilia hirsuta, 201.
 Blood-root, 158, 184.
 Blue bell, 156, 200.
 flag, 173.
 grass, 159, 160, 167.
 joint, 166.
 stem, 165, 168.
 Boneset, 206.
Botrychium virginianum, 157, 163.
Bouteloua curtipendula, 167.
 racemosa, 167.
 Box-elder, 153, 155, 156, 193.
 Brake, 164.
Brassica alba, 184.
 arvensis, 159, 184.
 nigra, 159, 161, 184.
 sinapistrum, 184.
 Britton, N. L., cited, 148.
 and Brown, cited, 148.
 Hollick and, cited, 148.
 Brome grass, 167.
Bromus asper, 168.
 aliatus, 159, 167.
 kalmii, 159, 167.
 purgans, 167.
 racemosus commutatus, 160, 168.
 secalinus, 160, 168.
 Brown, Britton and, cited, 148.
Brunella vulgaris, 201.
 Buckeye, 155, 156.
 Buckwheat, 179.
 Bugle-weed, purple, 201.
 Bull-rush, 169.
 Burdock, 159, 211.
 Burning bush, 192.
 Bur-marigold, nodding, 210.
 reed, 170.
 seed, 199.
 weed, 205.
Bursa bursa-pastoris, 159, 184.
 Bush-clover, 190.
 Butter-and-eggs, 202.
 Buttercup, 157, 183.
 Butternut, 153, 155, 175.
 Button-bush, 153.

Cabbage, skunk, 171.
Cacalia atriplicifolia, 211.

- reniformis*, 211.
suaveolens, 211.
tuberosa, 211.
Calamagrostis canadensis, 159, 166.
Calamus, 162, 171.
Caltha palustris, 157, 182.
Camelina sativa, 160, 185.
Campanula americana, 205.
 aparinoides, 205.
 perfoliata, 205.
 rotundifolia, 204.
 Campion, 157, 181.
Camptosorus rhizophyllus, 164.
 Canada balsam, 161.
 Candy grass, 167.
Cannabis sativa, 160, 178.
Capnoides micranthum, 157, 184.
Capsella bursa-pastoris, 185.
Cardamine bulbosa, 184.
 hirsuta, 184.
 rhomboidea, 184.
Carduus altissimus, 211.
 arvensis, 159, 211.
 discolor, 211.
 hilli, 211.
 lanceusis, 211.
 lanceolatus, 159, 211.
 muticus, 211.
Carex alburstna, 169.
 amphibola, 169.
 cephalophora, 169.
 cristatella, 170.
 festucacea, 170.
 gravida, 169.
 grisea, 169.
 hystericina, 169.
 latiflora, 169.
 longistrotris, 169.
 lupulina, 169.
 pennsylvanica, 169.
 rosea, 169.
 sparganoides, 169.
 stipata, 169.
 straminea, 170.
 stricta, 169.
 tencra, 170.
 tribuloides, 169.
 vulpincidea, 169.
 Carpet-weed, 180.
Carpinus caroliniana, 154, 176.
 Carrion-flower, 172.
 Carter, Mrs. M. C., 148.
Carya alba, 176.
 amara, 176.
Cassia chamaecrista, 160, 189.
Castalia, 156.
 odorata, 182.
Castilleja coccinea, 203.
 Catalpa, 155, 156.
 Catchfly, sleepy, 181.
 Catnip, 201.
 Cat-tail, 157, 170.
Caulophyllum thalictroides, 162, 183.
Ceanothus americana, 154, 193.
 ovatus pubescens, 154, 193.
 Cedars, 153, 154, 155, 156, 165.
Celastrus scandens, 153, 192.
Celtis crassifolia, 153, 178.
 occidentalis, 178.
Cenchrus tribuloides, 160, 166.
Cephalanthus, 153.
Cerastium arvense, 181.
 arvense oblongifolium, 181.
 longipedunculatum, 181.
 nutans, 181.
Chamaenerion angustifolium, 157, 195.
Cheilanthes feei, 164.
 lanuginosa, 164.
Chelone glabra, 202.
Chenopodium album, 160, 180.
 glaucum, 180.
 hybridum, 180.
 Cherry, 153, 154, 155, 189.
 ground, 160.
 Chickweed, 159, 181.
 Chicory, 160, 205.
Chimaphila umbellata, 161, 197.
 Choke-berry, 188.
 cherry, 154, 156.
Chrysanthemum leucanthemum, 210.
Chrysopogon nutans, 165.
Chrysosplenium alternifolium, 186.
 iowensis, 186.
Cichorium intybus, 160, 205.
Cicuta maculata, 196.
Cinna arundinacea, 159, 166.
 Cinquefoil, 153, 187.
Circaea alpina, 195.
 tutetiana, 195.
 Clammy-weed, 185.
Claytonia virginica, 157, 180.
 Cleavers, 203.
Clematis verticillaris, 183.
 virginiana, 157, 183.
 Clover, 157, 159, 160, 189, 190.
 Club-moss, 164.
Cnicus altissimus, 211.
 arvensis, 211.
 lanceolatus, 211.
 muticus, 211.
 Cocklebur, 160, 206.
Coeloclossum bracteatum, 173.
 Cohosh, blue, 183.
 Columbine, 156, 158, 182.
Comandra umbellata, 178.
 Compass-plant, 209.
 Cone-flowers, 160, 209.
Conium maculatum, 196.
Convolvulus arvensis, 199.
 sepium, 199.

- Corallorhiza multiflora*, 174.
 Coral-root, 174.
Coreopsis palmata, 210.
Cornus alternifolia, 153, 197.
 anomum, 153.
 asperifolia, 153.
 candidissima, 154, 196.
 circinata, 153, 196.
 paniculata, 196.
 stolonifera, 153, 196.
Corydalis micrantha, 157, 184.
Corylus americana, 153, 176.
 rostrata, 176.
 Cottonwood, 153, 155, 156, 174.
 Couch-grass, 168.
 Crab-apple, 153, 155, 188.
 Crab-grass, smooth, 165.
Cracca virginiana, 190.
 Cranberry, bush, 154, 203.
 Crane's-bill, 157, 191.
Crataegus, 153.
 coccinea, 188.
 crus-galli, 188.
 macracantha, 189.
 punctata, 188.
 tomentosa, 189.
 Cratty, R. I., cited, 148.
 Cress, 184.
 Crowfoot, 183.
Cryptogramma stelleri, 164.
Cryptotaenia canadensis, 196.
 Culver's root, 202.
 Currant, 209.
 Currants, 153, 155, 186.
Cuscuta cephalanthi, 160, 199.
 glomerata, 199.
 gonovii.
 paradoxa, 160, 199.
 Cut-grass, rice, 166.
 Cynthia, 205.
 Cyperus, 168.
Cyperus diandrus, 168.
 esculentus, 168.
 filiculmis, 168.
 schreinitzii, 168.
 Cypress, 168.
Cypripedium, 157.
 candidum, 173.
 hirsutum, 162, 173.
 parviflorum, 162, 173.
 pubescens, 173.
 reginae, 173.
 spectabile, 173.
Cystopteris bulbifera, 158, 163.
 fragilis, 157, 163.

Dactylis glomerata, 159, 160, 167.
 Daisy, 208, 210.
 Dandelion, 159, 205.
Dastiphora fruticosa, 153, 187.

Datura, 159.
Delphinium azureum, 162.
 carolinianum, 182.
Dentaria laciniata, 184.
Deringa canadensis, 196.
Desmodium acuminatum, 190.
 parviflorum, 190.
 Dewberry, 154, 187.
Dicentra canadensis, 184.
 cucullaria, 184.
Diervilla, 154.
Dioscorea villosa, 173.
Sirca palustris, 153, 195.
 Ditchmoss, 170.
 Dock, curly, 159, 160, 179.
 Dooders, 160, 199.
Dodecatheon meadia, 156, 157, 197.
Doellingeria humilis, 209.
 umbellata, 209.
 Dogbane, 198.
 Dog-fennel, 159, 210.
 Dogwood, 153, 154, 155, 196.
 Doorweed, 179.
Draba caroliniana, 185.
 Dragon-head, 201.
 root, 171.
 Dropseed, 166.
Drymocallis arguta, 187.
 Duckweed, 171.
 Dutchman's breeches, 184.

Eatonia pennsylvanica, 167.
Echinocystis lobata, 204.
 Eel-grass, 170.
 Elder, 153, 154, 155, 203, 205.
 Elecampane, 209.
Ellisia nyctelea, 199.
 Elm, 153, 154, 155, 156, 178.
Elocharis ovata, 168.
 palustris, 168.
Elodea canadensis, 170.
Elymus canadensis, 168.
 hystrix, 168.
 robustus, 168.
 striatus, 168.
Enothera biennis, 195.
 serrulata, 195.
Epilobium adenocaulon, 195.
 angustifolium, 195.
 coloratum, 195.
Equisetum arvense, 163.
 hyemale, 163.
 laevigatum, 163.
 robustum, 163.
Eragrostis frankii, 167.
 major, 167.
 purshii, 167.
Erechtites hieracifolia, 160, 211.
 Erigeron, oil of, 161.

- Erigeron annuus*, 208.
 bellidifolius, 208.
 canadensis, 208.
 philadelphicus, 208.
 pulchellus, 208.
 ramosus, 208.
 strigosus, 208.
Eriophorum cyperinum, 169.
Eryngium aquaticum, 196.
 yuccaefolium, 196.
Erysimum cheiranthoides, 185.
Erythronium albidum, 157, 172.
 americanum, 172.
Euonymus atropurpureus, 153, 162, 192.
Eupatorium ageratoides, 158, 206.
 altissimum, 206.
 maculatum, 206.
 perfoliatum, 161.
 purpureum, 206.
 rydbergii, 206.
Euphorbia, -60.
 commutata, 192.
 corollata, 192.
 cyparissias, 192.
 maculata, 192.
 nutans, 192.
 previlii, 192.
Euthamia caroliniana, 207.
 graminifolia, 157, 207.
 Everlasting, plantain-leaf, 209.

Fagopyrum esculentum, 179.
 fagopyrum, 179.
Falcata comosa, 191.
 pitcheri, 191.
 Ferns, 157, 163, 164.
 Fescue, nodding, 167.
Festuca nutans, 167.
 octoflora, 167.
 tenella, 167.
 Fever-few, American, 209.
 Figwort, Maryland, 202.
 Fir, balsam, 155, 156, 165.
 Fire-weed, 160, 211.
 Fitzpatrick, T. J., cited, 149.
 Five-finger, 187.
 Flax, 160, 185, 191.
 Flea-bane, 160, 208.
 Flora, importance of, 149.
 Flora of Winneshiek county, character of, 147.
 Flowering plants of Winneshiek county, 164.
 Forage plants, 159.
 Forest problem of Winneshiek county, 150.
 Four o'clock, 180.
 Fox-tail, 166.
Fragaria americanum, 187.
 virginiana, 187.

Frazinus americana, 153, 197.
 lanceolata, 153, 197.
 nigra, 153, 198.
 pennsylvanica, 154.
 sambucifolia, 198.
 viridis, 197.
 Frostweed, hoary, 194.
Galeopsis tetrahit, 201.
Galeorchis spectabilis, 173.
Galium aparine, 203.
 asprellum, 203.
 boreale, 203.
 concinnum, 203.
Gaura parviflora, 195.
 Gentian, 157, 198.
Gentiana alba, 198.
 andrewsii, 158, 198.
 crinita, 198.
 flavida, 158, 198.
 puberula, 157, 198.
 quinqueflora, 198.
 quinquefolia occidentalis, 198.
Geranium maculatum, 157, 162, 191.
 Gerardia, 202, 203.
Gerardia aspera, 202.
 purpurea, 202.
 tenuifolia, 203.
Geum macrophyllum, 187.
 triflorum, 187.
 virginianum, 187.
 Ginseng, 196.
Glechoma hederacea, 159, 201.
Gleditsia, 153.
Glyceria americana, 167.
 grandis, 167.
 nervata, 167.
Gnaphalium obtusifolium, 209.
 polycephalum, 209.
 Goddard, Herbert E., 1-8.
 Goldenrod, 157, 158, 206, 207.
 Golden seal, 182.
Goodyera pubescens, 174.
 Gooseberry, 155, 186.
 Goosefoot, 180.
 Grape, wild, 153, 193.
 Grasses, 157, 159, 160, 165, 167, 168, 173, 185.
Gratiola virginiana, 202.
 Gray, Asa, cited, 148.
 Greenbrier, hispid, 154, 172.
 Gromwell, 203.
 Ground cherry, 202.
 Ground-nut, 191.
 Groundsel, balsam, 211.
Gyrostachys gracilis, 174.
Habenaria bracteata, 173.
 hookeri, 173.
 hyperborea, 173.
 leucophaea, 173.

- Hackberry, 153, 155, 156, 178.
Hamamelis virginiana, 161.
 Harebell, 204.
 Hawkweed, 205.
 Haws, 153, 154, 155, 188, 189, 204.
 Hazel, 153, 176.
 Heal-all, 201.
Hedeoma hispida, 201.
 pulgeoides, 161.
Helenium autumnale, 210.
Helianthemum canadense, 194.
 maius, 194.
Helianthus annuus, 160, 203.
 decapetalus, 210.
 grosse-serratus, 160, 210.
 occidentalis, 210.
 rigidus, 160, 210.
 scaberrimus, 210.
 strumosus, 210.
 macrophyllus, 210.
Heliopsis scabra, 209.
 Hemlock, 155, 196.
 Hemp, 160, 178.
 Hemp, Indian, 198.
Hepatica acuta, 157, 182.
 acutiloba, 182.
 lanatum, 196.
Hieracium lanatum, 196.
Heuchera hispida, 186.
 Hickory, 154, 155, 176.
Hicoria minima, 154, 176.
 ovata, 154, 176.
Hieracium canadense, 205.
 scabrum, 205.
 Hoarhound, water, 202.
 Hoary alder, 176.
 Hollick and Britton, cited, 148.
 Holway, E. W. D., 148.
 Honewort, 196.
 Honeysuckle, 153, 154, 155, 204.
Hordeum jubatum, 160, 168.
 Horse-gen., an., 204.
 Horse-radish, 184.
 Horsetail, 184.
 Horse-weed, 160, 208.
Humulus lupulus, 161.
 Hydrangea, 157.
Hydrastis canadensis, 162, 182.
Hydrophyllum appendiculatum, 199.
 virginicum, 158, 199.
Hypericum ascyron, 194.
 canadense, 194.
 cistifolium, 194.
 maculatum, 194.
 perforatum, 160.
 sphaerocarpon, 194.
Hypopitys americana, 197.
Hypoxis erecta, 173.
 hirsuta, 173.
 Hyssop, 201, 202.
Impatiens aurea, 193.
 biflora, 193.
 fulva, 193.
 pallida, 193.
 Indian pipe, 196.
 turnip, 170.
 Indigo, 153, 155, 189.
Inula helenium, 209.
Iodanthus pinnatifidus, 184.
Ipomoea pandurata, 198.
Iris versicolor, 159, 162, 173.
 Iron-weed, 206.
 Iron wood, 154, 176.
Isanthus brachiatus, 200.
Isopyrum biternatum, 157, 182.
Ira xanthifolia, 160, 205.
 Ivy, 153, 159, 192, 201.
 Jacob's ladder, 156, 157, 199.
 Joe-pye weed, 206.
Juglans cinerea, 162, 175.
 nigra, 153, 175.
Juncus nodosus, 171.
 tenuis, 160, 171.
 caseyi, 171.
 June-berry, 154, 155, 188.
 Juniper, 154, 165.
 oil of, 161.
Juniperus communis, 161, 165.
 virginiana, 154, 165.
 Knotweed, 179.
Koeleria cristata, 167.
Koelia flarvosa, 201.
 virginicus, 201.
 Kovarik, Alois, cited, 148.
Krigia amplexicaulis, 205.
 eupatorioides, 206.
Kuhnia glutinosa, 206.
Kuhnistera candida, 157, 190.
 purpurea, 154, 190.
Lacinaria, 157.
 cylindracea, 206.
 pycnostachya, 206.
 scariosa, 206.
Lactuca canadensis, 205.
 scariola, 159, 205.
 Ladies' slippers, 157, 173.
 Lamb's quarters, 160, 180.
Laportea canadensis, 178.
Lappula lappula, 199.
 terrena, 199.
 virginiana, 160, 199.
 Larch, European, 155, 156.
 Larkspur, prairie, 182.

- Lathyrus achroleucus*, 191.
 venosus, 191.
 Lead plant, 154.
 Leaf-cup, 209.
 Leather-wood, 153, 195.
Lechea stricta, 194.
 Leek, wild, 171.
Leersia oryzoides, 159, 166.
Lemna trisulca, 171.
Leonurus cardiaca, 160, 201.
Lepachys pinnata, 209.
Lepidium apetalum, 184.
 intermedium, 184.
 virginicum, 160, 184.
Leptandra virginica, 162, 202.
Leptilon canadense, 160, 161, 208.
Leptorchis liliifolia, 174.
Lespedeza capitata, 190.
 leptostachya, 190.
 Lettuce, 159, 205.
Liatris cylindracea, 206.
 graminifolia, 206.
 pycnostachya, 206.
 scariosa, 206.
Lilium canadense, 172.
 philadelphicum, 172.
 umbellatum, 172.
 Lily, 156, 157, 172, 182.
 Lily of the Valley, false, 172.
Limnorchis hyperborea, 173.
Linaria linaria, 202.
 vulgaris, 202.
Linnaea americana, 204.
 borealis, 204.
Linum sulcatum, 191.
 usitatissimum, 191.
Liparis liliifolia, 174.
Lithospermum angustifolium, 200.
 cancscens, 200.
 gmelini, 200.
 hirtum, 200.
 latifolium, 200.
 linearifolium, 200.
 Liver-leaf, heart, 182.
 Lobelia, 157, 205.
Lobelia inflata, 161, 205.
 leptostachys, 205.
 spicata, 205.
 Locust, 153, 155, 156, 190.
Lonicera, 153.
 dioica, 204.
 glauca, 204.
 sullivantis, 204.
 tatarica, 204.
 Loosestrife, 197.
Lophanthus repetoides, 201.
 scrophulariaefolius, 201.
 Lopsed, 203.
 Louisewort, 203.
Ludwigia polycarpa, 195.
 Lungwort, 156, 157, 200.
 Lupine, 159.
Lupinus perennis, 189.
Lychnis alba, 181.
 githago, 181.
 vespertina, 181.
Lycopodium lucidulum, 164.
Lycopus americanus, 202.
 canadensis, 202.
 virginicus, 201.
 Lyme-grass, 168.
Lysias hookeriana, 173.

Macrocalyx nychctra, 160, 199.
 Mallow, 159, 194.
Malus ioensis, 153, 188.
Malva crispa, 194.
 rotundifolia, 159, 194.
 Maple, 153, 154, 155, 156, 193.
 Marigold, marsh, 157, 182.
 Marsh-elder, burweed, 160, 205.
 May-apple, 158, 183.
 Mayweed, 210.
 Meadow-grass, 167.
 Meadow-rue, 183.
 Meadow-sweet, 153, 186.
 Medicinal plants of Winneshiek county, 161.
Meibomia grandifolia, 190.
 longifolia, 190.
 pauciflora, 190.
Melica nutica, 167.
Melilotus alba, 159, 189.
 officinalis, 159, 189.
Melilotus serrulata, 195.
Menispermum canadense, 162, 183.
Mentha canadensis, 202.
 Mercury, three seeded, 160.
Mertensia, 156, 157.
 paniculata, 200.
 virginica, 200.
Mesadenia antiplicifolia, 211.
 reniformis, 211.
 tuberosa, 211.
 Mexican dropseed, 166.
Micranthemum lobata, 204.
Microstylis ophioglossoides, 171.
 Milkweed, 160, 198.
 Milkwort, 192.
 Millet, German, 166.
Mimulus jamesii, 202.
 ringens, 202.
 Mint, 157, 202.
Mitchella repens, 203.
Mitella diphylla, 158, 186.
Moehringia lateriflora, 181.
Mollugo verticillata, 180.
Monarda fistulosa, 201.
 scabra, 157, 201.

- Monkey-flower, 202.
monotropa hypopitys, 197.
 uniflora, 197.
 Moonseed, 183.
 Moonwort, 157, 163.
 Motherwort, 160, 201.
 Mugwort, saw-leaf, 210.
Muhlenbergia glomerata, 159, 166.
 mexicana, 159, 160, 166.
 sylvatica, 166.
 Mullein, 160.
 Musk-root, 204.
 Mustard, 160, 184, 185.

Nabalus albus, 205.
 racemosus, 205.
Napaea dioica, 194.
Nasturtium armoracia, 184.
 officinale, 184.
 palustre, 184.
Negundo aceroides, 193.
Nepeta cataria, 201.
 glechoma, 201.
Nephrodium goldianum, 164.
 thelypteris, 157, 164.
 Nettle, 160, 201.
 New Jersey tea, 154, 155, 193.
 Nightshade, 160, 195.
 Nine bark, prairie, 153, 155, 186.
 Nut grass, yellow, 168.
Nuphar advena, 182.
Nyctelea, 160, 199.
Nymphaea advena, 182.
 odorata, 182.

 Oak, 154, 155, 156, 176, 177.
Oakesia sessilifolia, 171.
 Oats, grama, 167.
Onagra biennis, 160, 195.
 Onion, wild, 158, 171, 172.
Onoclea sensibilis, 157, 163.
 strythiopteris, 163.
Onosmodium carolinianum, 200.
 molle, 200.
Opulaster intermedius, 153, 186.
 Orange root, 182.
Orchis spectabilis, 157, 173.
 Ornamental plants, care of, 158.
 Orr, E., 148.
Oryzopsis melanocarpa, 166.
Osmorrhiza brevistylis, 196.
Osmunda claytoniana, 157, 163.
Ostrya virginiana, 154, 176.
 Oxalis, yellow, 160.
Oxalis corniculata, 191.
 stricta, 160, 191.
 violacea, 191.
 Ox-eye, rough, 209.

Oxybaphus nyctagineus, 180.
 Painted-cup, 203.
 Pammel, L. H., cited, 148.
Panar quinquefolium, 196.
 Panicum, 165.
Panicum capillare, 160, 165.
 crus-galli, 159, 165.
 dichotomum, 160, 165.
 glabrum, 160, 165.
 latifolium, 165.
 sanguinale, 160, 165.
 scribnerianum, 165.
 unciphyllum, 165.
Parietaria pennsylvanica, 178.
 Parilla, yellow, 183.
Parnassia caroliniana, 185.
 Parsnip, 159, 196.
Parthenium intergrifolium, 209.
Parthenocissus quinquefolia, 154, 193.
 Partridge-berry, 203.
 Partridge pea, 160, 189.
 Pasque-flower, 157, 183.
Pastinaca sativa, 159, 196.
 Pea, viny, 191.
 Pea-nut, hog, 131.
Pedicularis canadensis, 203.
 lanceolata, 203.
Pellaea atropurpurea, 164.
 gracilis, 164.
 Pennyroyal, 200, 201.
Penthorum sedoides, 185.
Pentstemon, 157.
 Pepper grass, 160, 184.
 Pepper root, 184.
Peranium pubescens, 174.
Persicaria, 179.
Petalostemon candidus, 190.
 violaceus, 190.
Phegopteris calarica, 163.
 robertiana, 163.
Philotria canadensis, 170.
Phleum pratense, 166.
 Phlox, 156, 157, 199.
Phlox divaricata, 157, 199.
 pilosa, 199.
Phryma leptostachya, 203.
Physalis lanceolata, 202.
 philadelphica, 202.
 pubescens, 160.
 virginiana, 202.
Physocarpus opulifolius, 186.
Phystostegia parvifolia, 201.
 virginiana, 201.

 Pigweed, 180.
Pilea pumila, 178.
 Pimpernel, yellow, 196.
Pimpinella integerrima, 196.
 Pine, 154, 155, 156, 164.
 Pine-sap, 197.

- Pinus strobus*, 154, 164.
 Pinweed, 194.
P. psissewa, 197.
 Plane tree, 186.
Plantago major, 159.
 rugeli, 160.
 Plantain, 159, 160, 170, 174, 208, 211.
 Plants of Winneshiek county, 147.
Platanus occidentalis, 186.
 Pleurisy-root, 198.
 Plum, 189.
Poa pratensis, 160, 167.
Podophyllum peltatum, 158, 162, 183.
 Poison ivy, 192.
Polanisia trachysperma, 185.
Polemonium reptans, 158, 199.
Polygala sanguinea, 192.
 senega, 162, 192.
 verticillata, 191.
 viridescens, 192.
Polygonum
 amphibium, 179.
 aviculare, 179.
 camporum, 179.
 convolvulus, 159, 180.
 douglasii, 180.
 dumetorum, 180.
 emersum, 179.
 hydropiper, 179.
 incarnatum, 179.
 lapathifolium, 179.
 muhlenbergii, 179.
 pennsylvanicum, 160, 179.
 persicaria, 179.
 sagittatum, 180.
 scandens, 180.
 tenue, 180.
 virginianum, 180.
Polymnia canadensis, 209.
 uedalia, 209.
Polypodium vulgare, 163.
 Polypody, 163.
 Pondweed, 170.
 Poplar, 155, 156, 174.
Populus alba, 174.
 balsamifera, 174.
 candicans, 154, 174.
 deltoides, 153, 174.
 grandidentata, 154, 174.
 monilifera, 174.
 tremuloides, 154, 174.
Portulaca oleracea, 159, 181.
Potamogeton fluitans, 170.
 foliosus, 170.
 lonchites, 170.
 pauciflorus, 170.
 Potato vine, wild, 198.
Potentilla arguta, 187.
 canadensis, 187.
 fruticosa, 187.
 monspeliensis, 187.
 norvegica, 187.
 tridentata, 187.
Prenanthes alba, 205.
 racemosa, 205.
 Primrose, evening, 160, 195.
Prunella vulgaris, 201.
Prunus americana, 189.
 pennsylvanica, 155, 189.
 pumila, 153, 189.
 serotina, 154, 162, 189.
 virginiana, 154, 162, 189.
Pteridium aquilinum, 164.
Pteris aquilina, 164.
 Puccoon, 200.
Pulsatilla hirsutissima, 157, 161, 183.
 Purslane, 159, 181, 192.
 Putty root, 174.
Pycnanthemum lanceolatum, 201.
 linifolium, 201.
Pyrrola elliptica, 197.
 secunda, 197.
Pyrus arbutifolia, 188.
 coronaria, 188.
Quercus alba, 154, 162, 177.
 borealis, 177.
 coccinea, 177.
 macrocarpa, 177.
 rubra, 154, 176.
 schneekii, 176.
 texana, 176.
 velutina, 177.
 Ragweed, 160, 206.
Ranunculus abortivus, 183.
 aquatilis, 183.
 fascicularis, 157, 183.
 ovalis, 183.
 pennsylvanicus, 183.
 recurvatus, 183.
 rhomboides, 183.
 septentrionalis, 183.
 Raspberry, 154, 161, 186.
Ratibida pinnata, 209.
 Red-root, 154, 193.
 Red-top, 166.
 Reed-grass, Indian, 166.
 Reforestation, method of, 152.
Rhus glabra, 154, 161, 192.
 hirsuta, 154, 192.
 radicans, 153, 161, 192.
 toxicodendron, 161, 192.
 typhina, 192.
Ribes cynosbati, 153, 186.
 floridum, 153, 186.
 gracile, 186.
 missouriensis, 153, 186.
 rubrum, 155, 186.
 Rice, mountain, 166.

- Robinia pseudacacia*, 155, 190.
 Rock-cress, 185.
 Rocket, purple, 184.
Roripa
 armoracia, 184.
 nasturtium, 184.
 palustris, 184.
Rosa
 arkansana, 154.
 blanda, 154, 187.
 humilis, 154, 188.
 sayi, 188.
 woodsii, 188.
Rose, 154, 155, 187, 188.
Rubus
 americanus, 186.
 canadensis, 187.
 nigrobaccus, 162.
 occidentalis, 152, 154, 161, 187.
 procumbens, 154, 162, 187.
 strigosus, 154, 161, 186.
 triflorus, 186.
 villosus, 187.
Rudbeckia
 hirta, 209.
 laciniata, 160, 209.
 triloba, 209.
Rue, goat's, 190.
Rue-anemone, 157, 182.
Rumex
 acetosella, 160, 179.
 altissimus, 179.
 britannica, 160, 179.
 crispus, 159, 179.
 patentia, 160, 179.
 verticillatus, 179.
Rush, 169, 171.
Rush-grass, 166.
Rye, wild, 168.
Sage, wood, 200.
Sagittaria
 latifolia, 170.
 rigida, 170.
St. John's-wort, 160, 194.
Salicin, 162.
Salix
 alba, 175.
 amygdaloides, 153, 175.
 cordata, 153, 175.
 discolor, 153, 175.
 ericocarpa, 175.
 humilis, 154, 175.
 interior, 153, 175.
 longifolia, 175.
 lutida, 153, 175.
 missouriensis, 175.
 nigra, 153, 174.
 petiolaris, 175.
Salomonita
 commutata, 157, 172.
Salsola
 kali, 180.
 tragus, 160, 180.
Sambucus
 canadensis, 153, 161, 203.
 pubens, 154, 203.
 racemosa, 203.
Sandbar, 160, 166.
Sanguinaria
 canadensis, 158, 162, 184.
Sanicle, 196, 206.
Sanicula
 marylandica, 196.
Saponaria
 officinalis, 181.
 vaccaria, 181.
Sarsaparilla, wild, 195.
Savage, T. E., cited, 148, 149.
Saxifraga
 pennsylvanica, 185.
Saxifrage, 185, 186.
Scirpus
 americanus, 169.
 atrovirens, 169.
 cyperinus, 169.
 lacustris, 169.
 pungens, 169.
 validus, 169.
Scouring-rush, 163.
Scrophularia
 marylandica, 160, 202.
Scutellaria
 cordifolia, 185.
 lateriflora, 161, 200.
 parvula, 200.
 vesicular, 200.
Sedges, 169, 170.
Scelagrella
 rupestris, 164.
Senecio
 aureus, 211.
 balsamifolius, 211.
Senega, 162.
Setaria
 germanica, 166.
 glauca, 159, 160, 166.
 italica, 166.
 viridis, 160, 166.
Shadbush, 153, 188.
Sheep-berry, 153, 155, 204.
Sheep sorrel, 160, 179.
Shepherd's purse, 159, 185.
Shimek, B., cited, 148, 149.
 Flora of Winneshiek county, 147.
Shooting star, 156, 157.
Sibbaldiopsis
 tridentata, 187.
Sickle-pod, 185.
Sierersia
 ciliata, 187.
Silene
 alba, 181.
 antirrhina, 181.
 stellata, 157, 181.
Silphium
 laciniatum, 209.
 perfoliatum, 209.
Sinapis
 alba, 184.
 nigra, 161.
Sisymbrium
 canescens, 185.
 officinale, 160, 184.
Sisyrinchium
 angustifolium, 157, 173.
Stem
 cicutae-folium, 196.
Skull-cap, 200.
Smartweed, 160, 179.
Smilacina
 racemosa, 172.
 stellata, 172.
Smilax, upright, 172.
Smilax
 cirrhata, 172.
 herbacea, 172.
 hispida, 154, 172.

Snakeroot, 158, 192, 196.
 Sneezeweed, 210.
 Snowberry 204.
 Soapwort, 181.
Solanum nigrum, 160.
Solidago *bicolor*, 207.
 canadensis, 207.
 flexicaulis, 206.
 hispida, 207.
 lanceolata, 207.
 latifolia, 206.
 missouriensis, 207.
 nemoralis, 207.
 rigida, 207.
 rigidiuscula, 207.
 scrotilina, 157, 207.
 scrotilina gigantea, 207.
 speciosa, 157, 207.
 tenuifolia, 207.
 uliginosa, 207.
 ulmifolia, 158, 207.
 Solomon's seal, 157, 172.
Sonchus asper, 160, 205.
Sophia intermedia, 185.
 Sow-thistle, 160, 205.
 Spanish needle, 160, 210.
Sparganium eurycarpum, 170.
Spartina cynosuroides, 159, 167.
Spathyema foetida, 171.
 Speedwell, 160, 202.
 Spiderwort, 171.
 Spiderard, 172, 195.
 Spike-rush, 168.
Spiraea salicifolia, 153, 186.
Spiranthes gracilis, 174.
Spiranthes cuspidatus, 166.
Spiradela polyrrhiza, 171.
 Spring beauty, 157, 180.
 Spruce, Norway, 155, 156.
 Spurge, 160, 192.
 Squaw weed, swamp, 211.
 Squirrel corn, 184.
Stachys aspera, 201.
 palustris, 201.
Staphylea trifolia, 154, 192.
 Star-grass, 173.
Stecronema ciliatum, 197.
 longifolium, 197.
 quadriflorum, 197.
Stellaria longifolia, 181.
 media, 181.
Stipa spartea, 166.
 Stitchwort, 181.
 Strawberries, 187.
Struthiopteris struthiopteris, 157, 163.
Sullivantia ohioensis, 186.
 sullivantii, 186.
 Sumach, 154, 155, 192.
 Sunflower 160, 209, 210.
 Sweet Cicely, 196.
 Sweet-clover, 189.
 Sycamore, 186.

Symphoricarpos occidentalis, 154, 204.
 racemosus, 204.
Symplocarpus foetidus, 171.
Synedemon thalictroides, 157, 182.
Synosma suaveolens, 211.
Sysymbrium officinale, 184.
Taenidia integerrima, 196.
Tanacetum vulgare, 160, 210.
 Tansy, 160, 210.
 Tansy-mustard, 185.
Taraxacum officinale, 159, 205.
Taxus canadensis, 153, 165.
Tephrosia virginiana, 190.
Teucrium canadense, 200.
Thalictrum dioicum, 183.
 purpurascens, 183.
Thelypodium pinnatifidum, 184.
 Thistle, 159, 160, 180, 201, 211.
 Thornapple, 159.
 Tickseed, stiff, 210.
 Tick-trefoil, 190.
Tilia americana, 154, 194.
 Timothy, 159, 166.
 Tobacco, Indian, 205.
 Touch-me-not, 193.
Tradescantia bracteata, 171.
 reflexa, 171.
 virginica, 171.
Traxus canadensis, 165.
 Trees and shrubs of Winnebago
 county, 153.
Trifolium arvense, 189.
 hybridum, 190.
 pratense, 189.
 procumbens, 160.
 repens, 160, 190.
Trillium, 157.
 erectum, 172.
 nicale, 158, 172.
Triostema aurantiacum, 204.
 perfoliatum, 204.
 Twayblade, 174.
 Twin-flower, 204.
Typha latifolia, 170.

Ulmus americana, 153, 178.
 fulva, 154, 162, 178.
 racemosa, 154, 178.
Unifolium canadense, 172.
Urtica gracilis, 160, 178.
Urticastrum divaricatum, 178.
Utricularia vulgaris, 203.
Uvularia grandiflora, 157, 171.
 sessilifolia, 157, 171.

Vaccaria vaccaria, 181.
Vagnera racemosa, 157, 172.
 stellata, 157, 172.
Vallisneria spiralis, 170.
 Velvet-leaf, 160, 194.
Verbascum, 160.

Verbena, 160.
Verbena bracteosa, 200.
 hastata, 200.
 stricta, 200.
 urticifolia, 200.
Veronia fasciculata, 206.
Veronica anagallis, 202.
 anagallis-aquatica, 202.
 arvensis, 202.
 peregrina, 160, 202.
 virginica, 202.
 Vervain, 200.
 Vetch, 158, 190.
 Vetchling, 191.
 Viburnum, 162.
Viburnum dentatum, 154, 204.
 lentago, 153, 154, 204.
 opulus, 154, 162, 203.
 prunifolium, 162.
 pubescens, 203.
Vicia americana, 158, 190.
 angustifolia, 191.
 cracca, 190.
 sativa, 191.
Viola canadensis, 195.
 palmata, 195.
 papilionacea, 157, 195.
 pedata, 157, 194.
 pedatifida, 157, 194.
 pubescens, 157, 195.
 scabrituscula, 195.
 Violet, 156, 157, 172, 194, 195.
 Virginia creeper, 154, 155, 193.
 Virgin's-bower, 153, 157, 183.
Vitis riparia, 193.
 vulpina, 153, 193.
 Wahoo, 153, 192.

INDEX.

Wake-robin, 158, 172.
 Walnut, 153, 155, 156, 175.
Washingtonia claytoni, 196.
 Water crow-foot, white, 156, 183.
 Water-leaf, 158, 199.
 Water-plantain, 170.
 Wheat-grass, 168.
 Whitlow-grass, Carolina, 185.
 Willow, 153, 154, 155, 175.
 Willow-herb, 157, 195.
 Winneshiek county, annotated list of
 plants, 162.
 flora of, 147.
 forest problems,
 150.
 medicinal plants,
 161.
 trees and shrubs,
 153.
 Wintergreen, 197.
 Wolf-berry, 154, 204.
Woodsia ilvensis, 163.
 Wood-sorrel, 191.
 Wool-grass, 169.
 Wormwood, 210.
Xanthium canadense, 206.
 echinatum, 160, 206.
Xanthoxylum americanum, 154, 162,
 191.
 Yam root, 173.
 Yarrow, 210.
 Yew, American, 153, 165.
Zizia aurea, 196.
Zygadenus elegans, 171.

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